

# THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal Trades.

Published every Thursday Morning by David Williams Co., 232-238 William St., New York.

Vol. 71: No. 4.

New York, Thursday, January 22, 1903.

\$5.00 a Year, including Postage.  
Single Copies, Ten Cents.

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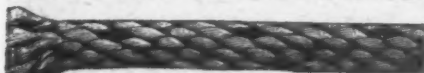


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SEE  
PAGE 150.



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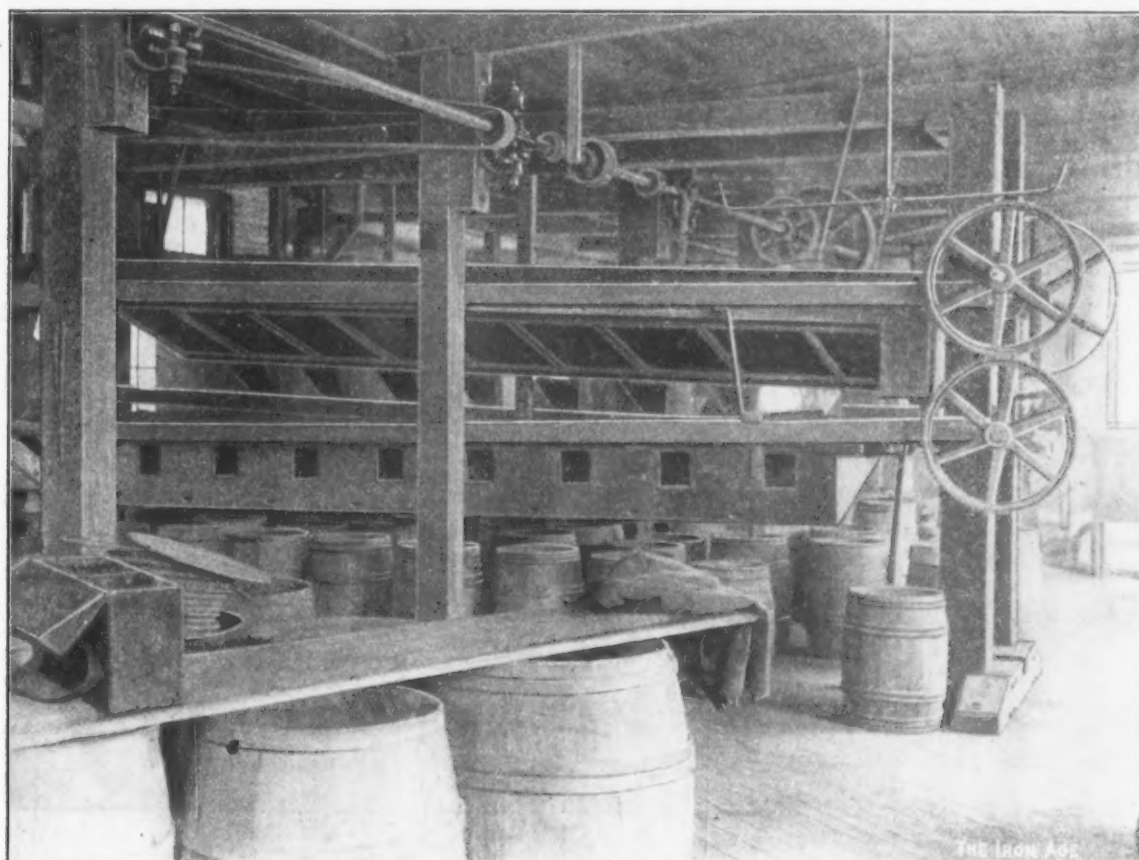
# THE IRON AGE

THURSDAY, JANUARY 22, 1903

## The New Works of the Hampden Corundum Wheel Company.

Something over a year ago the entire plant of the Hampden Corundum Wheel Company of Springfield, Mass., was destroyed by fire. The destruction was absolute in every particular, so that in the work of rebuilding the company were unhampered by any single portion of the original works. Owing to this fact they were enabled to introduce in the new establishment extensive improvements which had long been contemplated, and which were intended to increase the efficiency and en-

to the use of waste products in the shape of heat. It is no exaggeration to state that the emery and corundum are treated as if they were gold bearing ores, while the combustion of coal is not considered complete or its utilization made perfect as long as the temperature of the stack is anywhere round 1000 degrees. How these ideas are carried out will be appreciated from the following description. It may be well to state in parenthesis that this account is not to be considered as a complete and thorough account of the entire works. Sufficient time has not elapsed since the fire to permit the management to bring the entire establishment to the standard they have set up, and therefore our text merely



*Grading Machine.*

### THE NEW WORKS OF THE HAMPDEN CORUNDUM WHEEL COMPANY.

able them to manufacture their emery and corundum wheels at a much lessened cost. The changes embodied in the new design embrace processes and appliances commencing with the reception of the emery and corundum in a crude state, or in the condition in which they leave the mines, and in their manipulation through the several departments to the storage and shipping rooms. What is of particular interest rests in the fact that these innovations are marked departures from the usual practice in works of this kind and in every case demonstrate a step decidedly in advance.

In carrying forward the work particular attention has been paid to the handling of material as it passes through the works, and in every instance possible manual labor has been dispensed with. Another and peculiarly noteworthy feature is the care which has been exercised in the saving of what are usually considered as waste products. This applies not only to the utilization of every particle of raw product received, but also

mentions certain aspects which are interesting and which will serve to indicate what may be expected of the works when finished.

The general arrangement of the plant will be understood from the plan view of the first floor, Fig. 3. The rock is received in the crusher and roller room, where it is crushed and then distributed to the grading room, Fig. 1, from which it passes to the molding room immediately below, then to the drying room above the kilns, then down to the kilns for burning, thence across to the turning room for dressing and receiving the hub, and then to the stock room. Conveyors carry the crushed material from the rolls up to the grading room. After having been crushed the product is washed, dried and elevated by conveyors to storage bins placed on the roof. From here it is sent to the grading machines, or bolters, of which there are two, one being shown in Fig. 1. These are of the usual construction, consisting of two slightly inclined troughs, the bottoms of which are made of screens

of different meshes to the inch, so as to provide the proper grading of the material. At the right hand end of the machine are two systems of cams, which serve to agitate the troughs and thereby insure the passage of the material over the screens. At each screen is an outlet, or spout, through which the ground corundum flows into a barrel.

Each barrel of all the different grades is subjected to the action of a blower, the arrangement of which is indicated in Fig. 2. The contents of a barrel is dumped into a receptacle, shown at the extreme right, from which it is elevated by bucket conveyor and deposited in the hopper shown in the center of the engraving. From the hopper it passes through an inclined pipe and emerges from the lower end into a barrel. A strong draft of air from the blower shown at the left passes through the inclined pipe and carries away all light impurities.

The grading room, as stated, is just above the mixing

this construction the top of the kiln is a very flat dome or arch built on a radius of about 25 feet. This forms a platform used for drying the clay employed as a binder. At the end of a heat the dried clay is shoveled from the roof of the kiln and taken to the mixing room.

Each kiln is fired in the usual way from coal furnaces arranged in equal distances around the base. The floor of the kiln is provided with openings, which lead to an underground flue extending to the stack, as shown in Fig. 3. It is apparent that this construction is simpler than that usually followed, and provides for the utilization of a certain part of the heat which would otherwise be lost. But the scheme, as contemplated by the president of the company, William P. Leshure, goes still further, and use will be found for the heat passing up the stack. It is expected in the near future to arrange a boiler in the stack, which will be called upon to help out the main boiler, or to run a small supplementary engine.

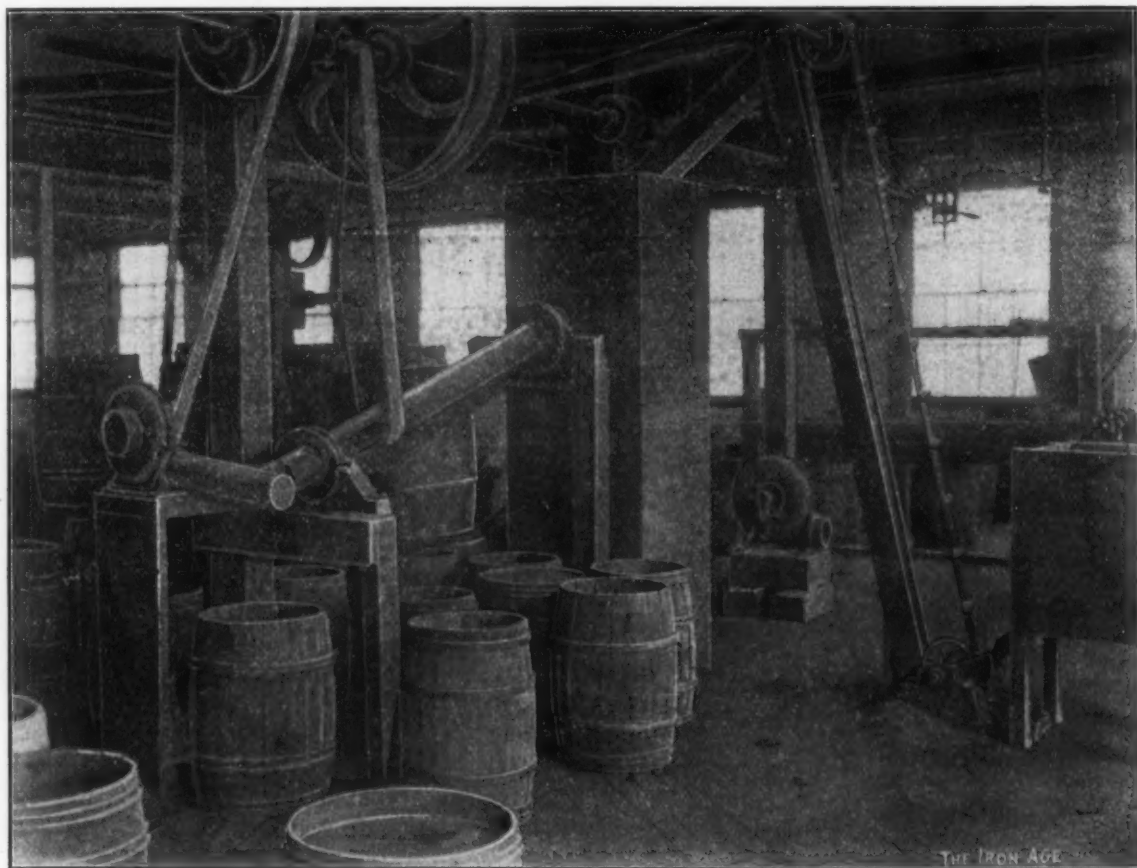


Fig. 2.—Blowing Out Dirt from Graded Material.

#### THE NEW WORKS OF THE HAMPDEN CORUNDUM WHEEL COMPANY.

and molding room. In the floor of the former are openings which lead to bins in the mixing room, which are by this means kept filled with a supply of the different grades of material.

In the molding room the different grades of wheels are molded, some being tamped by hand and some being formed in a hydraulic press capable of exerting 300 tons pressure. From here the partly finished wheels pass to the drying room, which is heated through openings in the floor from the kiln room. The wheels are here placed in racks, and after having been thoroughly dried are lowered to the kiln floor, by a gravity elevator, the location of which is shown in the plan view.

#### The Kilns.

One of the kilns is illustrated in Fig. 4, while the general arrangement of the kiln room will be understood from the plan, Fig. 3. It is here that we find one of the most marked innovations of the entire plant. It will be noted that the kiln lacks the usual conical top, which in the ordinary construction serves as a stack, and through which all waste heat passes to the outside. In

As is well known, the wheels intended for burning are placed in fire clay boxes surrounded with a packing of quartz. But in the present instance this method is not followed. The coarse emery or corundum coming from the crushers is taken to the kilns and is used for packing the wheels instead of quartz. This system not only saves the expense of a quartz supply, but adds very materially to the value of the abrasive by burning out certain impurities found in it. The material having been once through the kilns is conveyed to the rollers and ground to a fine state.

#### Finishing Room.

A portion of the finishing room is shown in the last engraving, the machine in the foreground being arranged for truing the sides of the wheels. This machine consists of a yoke arranged to move parallel with the bed upon the top of which suitable guides are formed. The wheel is carried in an ordinary chuck mounted on a shaft placed at one end of the bed. One arm of the yoke carries a tool post in which is mounted the cutter. The cutter is of the usual form, conical in shape, and made of



steel. It is carried upon a spindle which is free to revolve as the cutter comes in contact with the wheel. The cutter is moved along the wheel by a screw actuated from the rear end of the bed. After the wheel has received its lead hub it is mounted upon an axle, and the face trued down by means of an ordinary emery wheel dresser.

The wheel is then balanced on horizontal straight

from Rangoon, the nearest seaport, and 80 miles east of Mandalay on the road to Kunlon, which is on the frontier of China. The structure, which was built for the Burma Railways Company, Limited, a railroad partly under the control of the Government of India, spans the Gokteik Gorge, formed by the Shungzoune River, which disappears in a natural tunnel 550 feet below the viaduct foundations. The contract for the bridge was

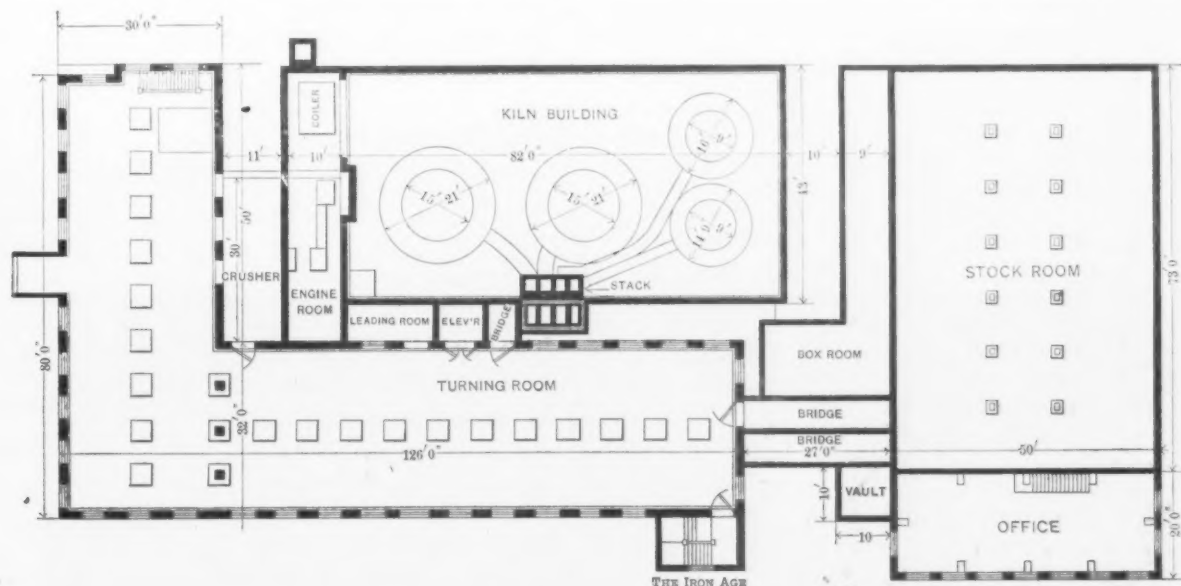


Fig. 3.—Plan of First Floor.

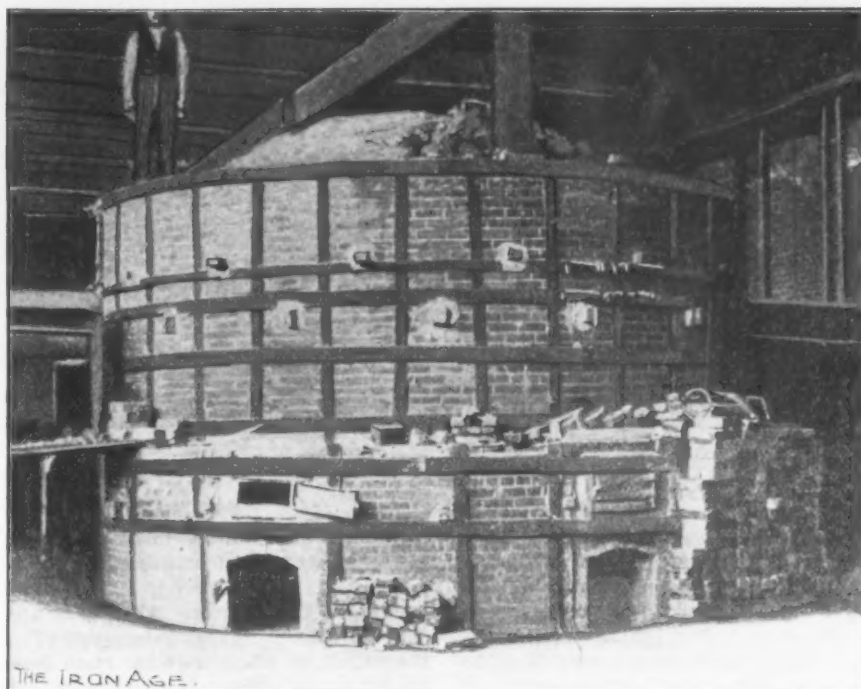


Fig. 4.—One of the Kilns.

#### THE NEW WORKS OF THE HAMPDEN CORUNDUM WHEEL COMPANY.

edges, tested under a higher speed than it will ever be subjected to in practice, and sent to the shipping room.

**"From Steelton to Mandalay."**—The Pennsylvania Steel Company of Steelton, Pa., have issued in the special interest of their bridge and construction department a strikingly handsome book entitled "From Steelton to Mandalay." This publication is a captivating history of the brilliant performance by the Pennsylvania Steel Company in the construction of the Gokteik viaduct in one of the Shan States of Upper Burma, 460 miles

executed April 28, 1899; the erection proceeded through the following rainy season and was accomplished November 1, 1900. The length of the structure is 2260 feet, its greatest height 320 feet, and the weight of the steel used is 9,760,000 pounds. The erection was accomplished under the direction of 35 bridge erectors sent from America, under whom were employed an average number of 350 skilled natives. A large number of illustrations reproduced from photographs give exceedingly interesting details in connection with the work of erection.

## Canadian Notes.

### Coal Duties.

TORONTO, January 17, 1903.—Manufacturers in Toronto and other industrial centers in Eastern Canada welcome the action of the United States in respect to the duty on coal. They consider that it marks the beginning of the end of coal duties as between Canada and the United States. Though the bill just signed by President Roosevelt provides that the rebate shall be paid only during a single year, it is believed here that if the Dominion Government immediately makes bituminous coal free in a similar provisional manner, the upshot will be an agreement between the two countries to let each other's coal in free for a period of years. At the present time anthracite coal comes into Canada free of duty, as it has done for many years. Bituminous coal, run of mine, is subject to a duty of 53 cents per ton of 2000

of the line was in a normal condition no further argument would be needed. But the sentiment in favor of obstruction is so strong that the removal of the coal duties will not be effected without an active and vigorous campaign.

In the fiscal year ending June 30, 1902, Canada imported 3,247,256 tons of bituminous coal, of which 3,204,627 tons came from the United States. Of anthracite it imported in that year 1,652,451 tons, all from the United States. In the same year it exported 1,817,534 tons of coal, of which 1,589,469 tons went to the United States. So the total quantity purchased from the United States is about three times what was sent there.

Naturally, while the coal companies of Nova Scotia are highly pleased with the prospect of a free United States market for a twelvemonth, they do not relish the idea of having American soft coal competing with them on even terms in the Canadian market. James Ross, president of the Dominion Coal Company, remarked in Montreal on Thursday: "I hope Canadians will not be

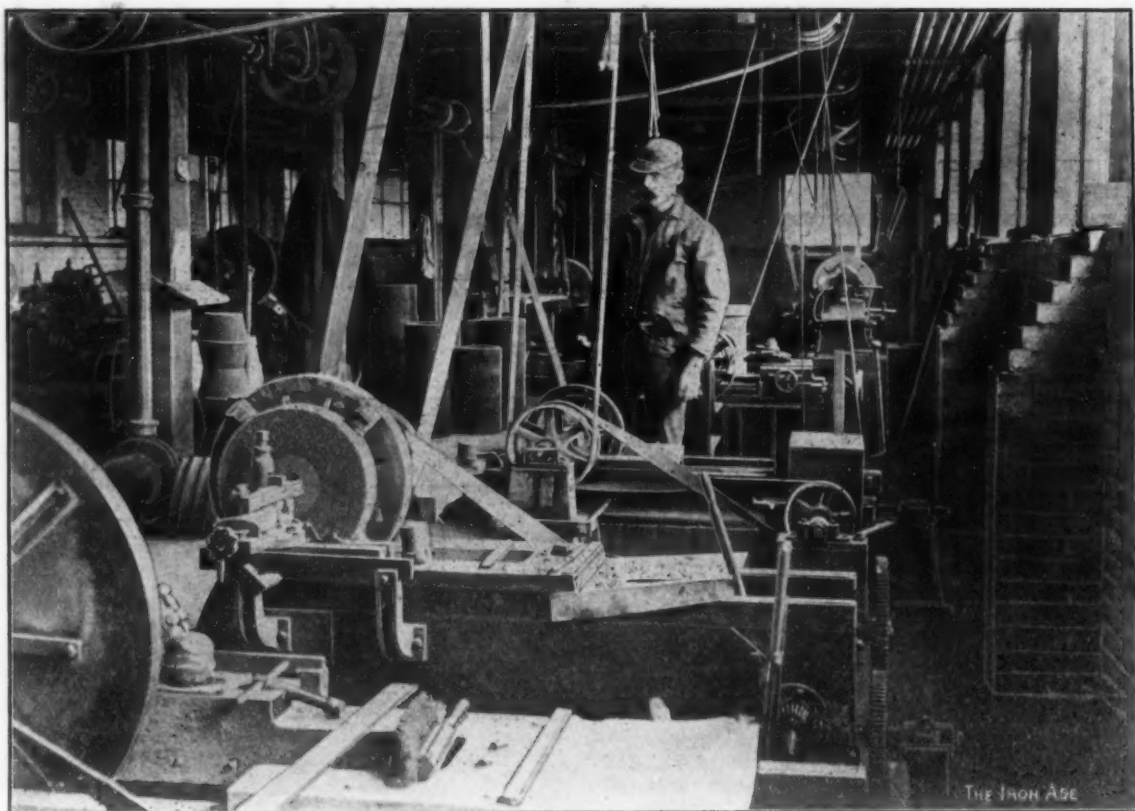


Fig. 5.—Finishing the Sides of Wheels.

### THE NEW WORKS OF THE HAMPDEN CORUNDUM WHEEL COMPANY.

pounds, and bituminous slack coal 20 per cent. ad valorem, though such 20 per cent. duty is in no case to exceed 13 cents a ton. In the tariff item prescribing the duty it is provided that if the United States should at any time fix the duty on bituminous, run of mine, coal at 40 cents per ton of 2240 pounds, the Canadian duty on such coal shall be reduced to the same rate. There is no further authority in the existing tariff for action by the Executive in the way of reciprocity in coal. But the Government is supposed to be favorable to a reduction of the coal duty to any basis the United States coal duty may be lowered to. The *Toronto Globe*, the leading organ of the Government, says on this subject:

All that is necessary is to extend this provision (namely for reduction to 40 cents by order in council) so that the Canadian duty may follow the American down to the vanishing point. Treaties are cumbersome affairs, easily obstructed by interested parties and liable to become sources of international ill-feeling. The needed change can be readily effected by reciprocal legislation in Congress and Parliament. Broadly speaking, the removal of the coal duties on both sides of the line is desirable, because Canadian miners have coal to sell which American consumers want to buy, and American miners have coal which Canadians want to buy. If opinion on both sides

caught in this matter. The cases are quite different. The United States coal enters this country by means of the railways, while the coal from Nova Scotia goes to the States by water. It would cost Canadian companies at least \$500,000 to receive proper accommodation for landing coal in Portland and Boston, and at the end of the year the Americans would resume the duty."

B. F. Pearson of Halifax, another director of the Dominion Coal Company, expressed doubt as to the sincerity of Congress' reciprocity mood, and added that if American coal were free Nova Scotia coal might be pushed from its present place in the Canadian market. His company, he said, has spent from \$300,000 to \$400,000 on their Montreal terminals. Free trade in coal, he said, might be a disturbing factor in the revenues of the Province of Nova Scotia, seeing that half the total income of the Government there comes from coal royalties.

Manager Shields points out that reciprocity would let American coal interests into the Canadian market in summer, and not give the Canadian coal companies any particular advantage in the United States in winter.



Ontario manufacturers get no coal at present from the Nova Scotia mines, and have never been able to get any. When application was made to Nova Scotia mine owners to tide over the autumn and winter scarcity of fuel, they replied that all their output was contracted for. It was hoped that the deepening of the canals would open the way for the shipping of Nova Scotia coal into Ontario, but so far no competition has come from that quarter. As Ontario manufacturers must get their coal from the United States, they want the duty removed.

#### Reciprocity Sentiment.

In a report adopted by the National Board of Trade at Washington on Thursday there is a resolution favoring action by the President, Congress and the American members of the Joint High Commission, to promote reciprocal trade relations between the United States and Canada. In this part of Canada that resolution has stirred up considerable interest. There always was a feeling here that a basis could be found for an interchange that would be mutually more profitable than we can have under present tariff restrictions. At the same time it is felt that Canada's tariff is much more liberal to the United States than the United States tariff is to Canada, and that there should be some very substantial concession offered from the other side before the idea of further lowering the Canadian tariff is entertained. Such a concession, at least temporarily, is made by the abolition of the American coal duty, and the Canadian people appear to be ready to reciprocate in kind. One of the members of the Dominion Cabinet, Sir Frederick Borden, Minister of Militia, made a speech in Toronto on Thursday night at the banquet of the Anglo-Saxon Union, an association composed of Canadians and Americans. In that speech he referred to the question of reciprocity with the United States, declaring that there must be no cringing on Canada's side, but that none but a fair arrangement would be entered into by this country. Canada, he said, is ready and willing to enter into such an arrangement with its neighbor.

#### "Adequate Protection."

R. L. Borden, leader of the Opposition in the Dominion House of Commons, spoke at a political meeting in Amherst, Nova Scotia, on Wednesday evening. He declared the platform of his party on the trade question to be "adequate protection." The prime consideration he held to be the protection of Canadian producers of manufactured articles.

Mr. Tarte, ex-Minister of Public Works, was one of the speakers at the annual banquet of the Brantford (Ontario) Board of Trade on Thursday evening. He said that he regretted nothing of what he had said about the fiscal and transportation policy of the Government, that he believed the order of the day was to increase protection and build up the country.

#### Canada's Foreign Trade.

The following is a comparative statement of the foreign trade of Canada in the second half of the calendar year 1902, and the same half of 1901:

IMPORTS.		
	1901.	1902.
Dutiable goods.....	\$56,936,189	\$64,582,101
Free goods.....	38,627,997	38,619,513
Total .....	\$95,564,186	\$103,201,614
Coin and bullion.....	4,098,663	2,839,121
Grand total.....	\$99,662,849	\$106,040,735
Duty collected .....	15,678,543	17,814,116
EXPORTS—DOMESTIC PRODUCE ONLY.		
	1901.	1902.
Products of the mine.....	\$21,770,193	\$18,418,617
Produce of the fisheries.....	8,302,501	6,889,775
Products of the forest.....	20,375,117	23,607,946
Animals and produce.....	37,919,390	45,178,795
Agriculture .....	16,385,584	21,516,306
Manufactures .....	8,796,750	9,634,070
Miscellaneous .....	19,225	55,457
Total merchandise.....	\$113,568,760	\$125,301,466

#### Lead Duties.

A deputation of silver lead mine owners of British Columbia waited on the Minister of Finance in Ottawa on Thursday with a petition to have the customs tariff

on lead, ore, bullion bars, sheets, pipe, shot and other lead products raised to the level of the American duties on these articles. It was represented that such a change was required to save the life of the lead mining industry of British Columbia. It was stated that the present depressed condition of lead mining in the province was, in part, due to exclusion from the market of the United States, the smelting trust across the line having closed its furnaces against British Columbia ore; in part, to the low prices in the world's market; in part, to the fact that manufactured lead comes in almost duty free from the United States. Though the paint manufacturers of Canada are large users of lead, they appear to sympathize with the efforts of the silver-lead interests to get the duties increased, but if these duties are increased the paint men want compensating increases of duty upon their finished product. The Finance Minister promised to consider the petition.

#### Dominion Coal and Steel Companies' Earnings.

The Executive Committee of the Dominion Coal Company and of the Dominion Iron & Steel Company met at Montreal on Thursday. The following statement covering the seven months ending November 30, 1902, was given out:

Earnings coal department, nine months.....	\$1,821,673.36
Earnings steel department, seven months.....	265,035.56
Total .....	\$2,086,708.92
Bond interest, seven months.....	\$232,268.59
General interest, seven months.....	103,353.94
Coal lease, nine months.....	1,200,000.00
Sinking fund, seven months.....	29,166.62
Total .....	\$1,564,789.15
Net earnings.....	521,919.77
Preferred stock dividend, seven months.....	204,166.67
Surplus .....	\$317,753.10

One matter to which considerable attention was given at the meeting was the question of approaching the Government to get a duty placed on steel rails and increased duties on other steel products. It was stated that the machinery for the structural steel mill was en route from Germany, and that the mill would probably be in operation by next May. James Ross, the president of the companies, leaves shortly on a two months' trip to Europe. Mr. Ross denies the statements recently made that there is any trouble with the ore, and that there have been any differences among the directors.

C. A. C. J.

#### Edward Atkinson on Trade Unions.

At Boston on January 15 Edward Atkinson lectured to members of the Cambridge Prospect Union on "The True Form of a Labor Union." Mr. Atkinson spoke principally of the textile workers, as he said that he knew most about them. He said that from 1860 until the time of the labor union the number of hours of the textile worker had been decreased more than any labor organization could hope to do. At the former date men were working 14 hours a day.

New machinery and the general advancement in the manufacture of the product made it possible to decrease the number of hours and have the same output. Accordingly, the working day was decreased to ten hours. He never saw a time when there were not more vacancies to be filled than there were unemployed laborers to fill them. In this statement, however, he excepted 1893, the year of the financial panic.

Under present conditions Mr. Atkinson said that the unions were wrong in dictating to employers how they should conduct their business. The present system, he said, kept the chances of the laboring man's advancing in the concern he is working for at a minimum. All laborers are kept on a level, and cannot climb up the ladder in accordance with their ability.

The American Cement Company produced 1,178,566 barrels of cement in 1902, as compared with 1,051,831 barrels in 1901. The company paid dividends of 8 per cent. on \$2,000,000 capital. There are also outstanding \$895,000 in bonds. A plan is under consideration to build a new 500,000 barrel mill, probably at Norfolk, Va.

### The Brier Hill Blast Furnace Gas Washer.

With the adoption of large percentages of Mesaba ores in blast furnace mixtures came the many troubles from furnace slips and the suspension of fine ore in the gases; the latter evil resulting in the deposition of flue dust upon the boiler tubes and the clogging of

against the water at each pocket, or pass, A B C, which consists of a flue of sufficient area to carry the gases from the furnace, introduced into a larger flue of sufficient area to allow the free passage of gas around the smaller flue. The large end of the flue is then contracted and introduced into the next pass, as the smaller flue. The gas seal is formed by extending the larger end of the flues below the surface of the water in the tank to a depth sufficient to seal against an ordinary gas pressure, while the plane of the smaller end is raised above the plane of the larger end, to facilitate the free passage of gas between the rim of the smaller pipe and the surface of water under the seal. The larger ends of the flues rest upon channel bars, I, arranged across the tank, to which they are tied down to prevent lifting, while sufficient area is provided between the passes or pockets and the walls of the tank to allow free passage of gas to the air as a relief in the case of explosions or heavy furnace slips.

The tank is supported upon piers arranged along either side; is of V-shaped construction, and provided with inverted bell doors along the bottom of ample size to remove all material collected in the tank. The tank is fed continuously with the waste water from the

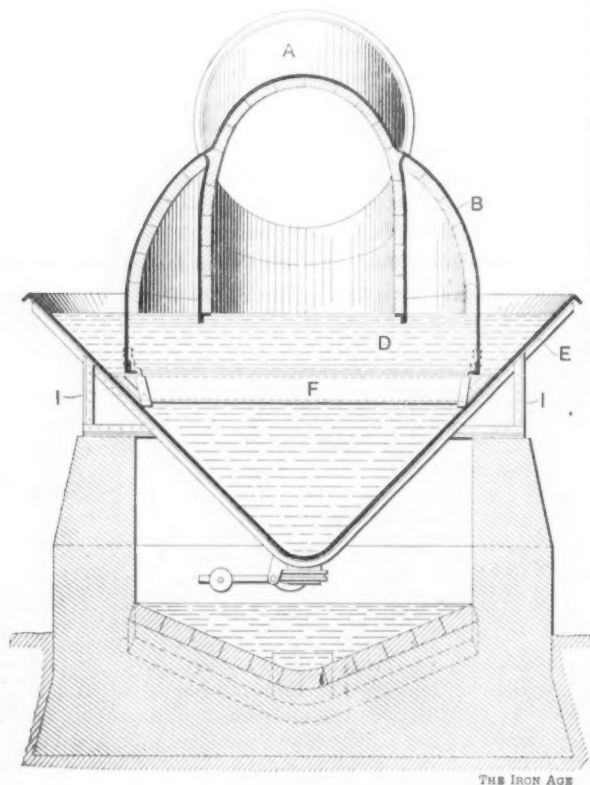


Fig. 1.—Cross Section.

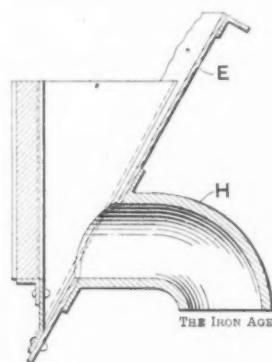


Fig. 2.—Overflow.

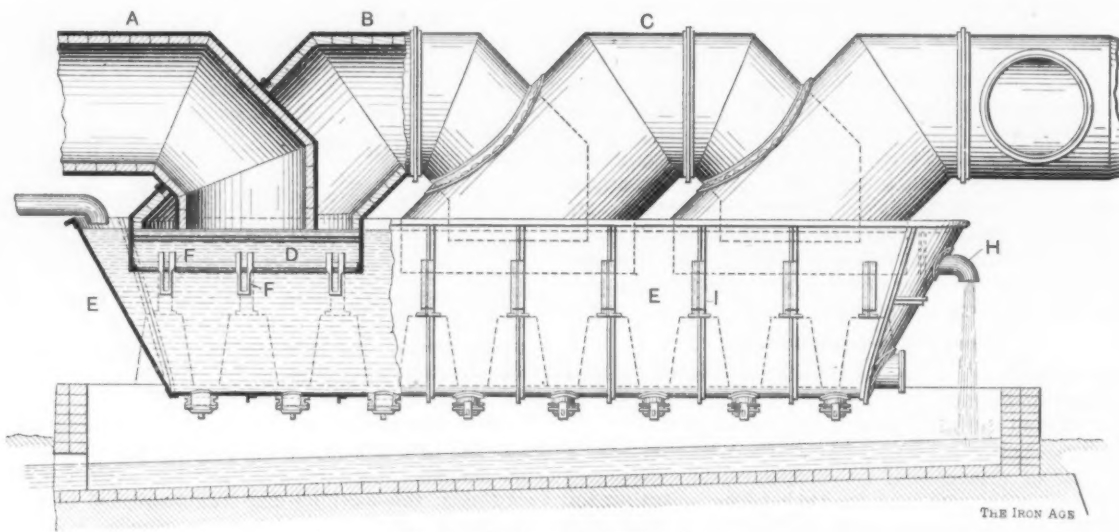


Fig. 3.—Sectional Side Elevation.

### THE BRIER HILL BLAST FURNACE GAS WASHER.

the passes in the hot blast stoves, which greatly decreased the heating efficiency of the plant and the life of hot blast connections. In order to provide an efficient method for removing these evils, R. C. Steese and E. L. Ford of Youngstown, Ohio, have designed and perfected a combination gas washer and pressure relief mechanism, the construction of which is shown clearly in the accompanying engravings.

By reference to the sketches it will be noted that the gas is impinged against a surface of water, D, whereby the solid particles carried by the gas are thrown upon the surface and rapidly sink to the bottom of the tank E, provided to receive the same. The gas is impinged

bosh, and the overflow, Fig. 2, which is adjustable, is so arranged as to wash from beneath the washer all material discharged from the cleaning doors. It is necessary that the doors be dropped periodically not more than once an hour to remove the flue dust from the tank, this operation requiring about five minutes' time.

The washer, as described, has been in continual operation at the furnace plants of the Youngstown Steel Company and the Brier Hill Iron & Coal Company for over a year, and it has been found that it will remove from the gas all flue dust with the exception of an impalpable powder, which gives very little trouble, as it is practically all carried along with the gas and waste



gases until it reaches the atmosphere. The above named companies are using, respectively, 95 and 87½ per cent. Mesaba ore from the Biwabik mine, and the use of this washer has made it possible to reduce the labor of cleaning stoves and boilers from a base of 14, in what was considered an efficient dust catcher plant, to a base of 1, to say nothing of the saving in wear and tear on brick work in stoves and boiler settings and the cutting of valve seats, tuyeres and blast connections. Gas entering the washer at a normal temperature of 450 degrees F. is discharged with a loss of only 25 degrees, showing how little moisture is absorbed by the gas and the advantage, in this respect, that this type of washer has over the spray type.

#### A Memorable Address by Abram S. Hewitt.

Reference has frequently been made to the remarkable forecast of the development of the American iron trade made by Abram S. Hewitt many years since, when this country occupied a decidedly subordinate place among iron producing nations. A memorable address on this subject was made by him before the American Institute of Mining Engineers in New York, May 21, 1872. An extract from this address was printed that year as part of the prospectus of the Brady's Bend Iron Company of Brady's Bend, near Kittanning, Pa. Through the courtesy of E. W. Dewey, president of the Dewey Iron & Steel Company, Brady's Bend, we have been favored with a copy of this prospectus, from which we take the report of Mr. Hewitt's address, as follows:

In 1856 I had occasion to trace the history of the manufacture of iron, and established what may be termed its law of development, rather rude indeed, but plainly dependent upon the growth of population, and the spread of civilization throughout the world. At that time the annual production of iron had reached about 7,000,000 tons, of which Great Britain produced 3,500,000 tons, and the United States about 1,000,000 tons. The consumption of Great Britain was 144 pounds, and of the United States 84 pounds, while the average consumption of the world was only 17 pounds per head of population. It was shown that the consumption per head was steadily on the increase, and that, consequently, the annual production was enlarging so rapidly as to double once in 14 years; and it was predicted, after making due allowances for all drawbacks, such as the wars which have unhappily taken place in the interval, beyond any possible expectation, that, in 1875, the production of iron would surely reach 14,000,000 tons. The actual returns show that in 1871 the production amounted to 13,500,000 tons, and in 1872 the limit of 14,000,000 tons will undoubtedly be passed; so that the estimate made in 1856 is more than realized. Meanwhile the consumption has risen in England to 200 pounds, in the United States to 150 pounds, and in the whole world to 30 pounds per head. It is not possible to convey a more striking idea of the progress of the world during the last 17 years than this statement affords. The consumption of iron measures the progress of civilization, and it is impossible not to believe that the whole world will ultimately require as much iron per head as we now use in the United States, when a total annual production of over 70,000,000 tons will be required. But if these figures seem to be at all wild, no one can for a moment doubt that the next 17 years will double the present annual production of iron, bringing it up to 28,000,000 tons per annum; and I feel quite safe in asserting that the beginning of the twentieth century, which some among you may hope to see, will witness an annual production of over 40,000,000 tons.

You need not be told that iron is produced at less money cost in Great Britain than in any other quarter of the globe. This has enabled her to produce about one-half of the total annual make. Of the 7,000,000 tons made in 1855, Great Britain produced 3,585,906 tons, and of the 13,500,000 tons produced last year she turned out nearly 7,000,000 tons. It is evident, however, that there are limits in the way of raw material and labor, beyond which Great Britain cannot go.

While I see no reason to doubt that there will be a steady increase in production, it is evident that she will not be able to supply hereafter, as heretofore, so much as half the annual wants of the world for iron. But, allowing this proportion to Great Britain, there will still remain 14,000,000 tons to be made by the rest of the world. The history of the trade, as well as the natural resources of the several nationalities, prove that the bulk of this additional product can only be made in the United States. We are, in fact, the only people who have kept pace with Great Britain in the ratio of increase. In 1855, when Great Britain produced 3,500,000 tons, we produced 1,000,000 tons. In 1872, when Great Britain will produce 7,000,000 tons, we produce 2,000,000 tons—the quantity produced in Great Britain in 1847—showing that we are only 25 years in arrear of her magnificent production. At the same rate, therefore, we could make 7,000,000 tons in 1897. But as Great Britain cannot possibly maintain her rate of increase, there does not seem room for a doubt that our annual production will reach at least 10,000,000, and will probably amount to 15,000,000 tons before the close of the present century. This means that 25,000,000 to 40,000,000 tons of iron ore shall be annually extracted from our mines, and that our coal production will exceed 100,000,000 tons per annum, required for iron and other branches of industry. It means that an investment of capital to the amount of \$500,000,000 at least, and probably \$1,000,000,000, shall be made in opening mines, erecting works and supplying the requisite machinery of production. New York is already the financial center of the American continent, and is destined to be the main distributor of capital for the world. This vast sum of money will therefore be drawn from the accumulations of capital controlled in New York, and its productive results will depend mainly upon the judgment and skill displayed in its expenditure. Here, then, is the common ground on which capital and science must meet and shake hands and be henceforth inseparable friends. But if it be the mission of science thus to reconcile capital with industry, it is the still higher and nobler mission of science to reconcile industry with capital. The world is full of the conflict between capital and labor. Where there should be peace there is war. Where nature intended an absolute harmony there is utter discord. For one, I am free to say, after the most careful investigation and very extensive observation, that iron has heretofore been made at too low a cost in foreign countries to allow the workmen engaged in its production a fair share of the necessities and comforts of life. This is due to the fact that the possession of virgin resources in coal and iron made it easy to increase production beyond the present wants of society. The resulting competition has had the effect to reduce prices to so low a point that proper wages could not be paid, and mankind has been enabled to get cheap goods at the expense of humanity itself.

The suspension of the coal duty will operate greatly to the advantage of foreign coal interests having contracts with consumers in this country. For instance, a Boston dispatch states that the Dominion Coal Company will benefit to the extent of 15 cents per ton saving on all culm shipped to the Everett Works of the Massachusetts Gas Companies, the duty having been borne by the former. Under the contract between these two companies there can be a minimum of 45,000 tons and a maximum of 65,000 tons shipped per month to Everett and the saving to the Coal Company through the removal of the duty on this culm will range between \$81,000 and \$117,000 for the year.

Anthracite furnacemen will be interested in the statement that in the week ending January 10, Pequest Furnace, at Oxford, N. J., owned by Cooper & Hewitt, made 600 tons of basic pig iron, using 1 ton 1 hundred-weight 3 quarters and 16 pounds of fuel to the ton of iron on ores yielding 53.65 per cent. The furnace is 67 x 16 feet, and the ores used were largely magnetic from the firm's mines at Ringwood, N. J.

## One of "System's" Penalties.

BY G. MILLER RUSSELL, BROOKLYN, N. Y.

In every business there is an abundance of good reason for a class of order which affects its regulation. If you are thoughtful the preservation of your system will not encroach too greatly upon that of your direct connections. The best of purposes, if abused, will somewhere be taskmasters. The rule which makes light your own cares may become burdensome to others.

The root of a growing evil seems to be embodied most strongly in our "Order Forms." The desire of all creators of business system bears the mark of necessity for something that must be self acting in every department of its course. The wish might be ideal if we were universally a "community in interest." Revolt will naturally ensue if there is coercion by unseemly demands for absolute recognition of our pet makings.

Smith gives his order to the grocer with caution to deliver print butter only, wrapped in triple paraffined paper, packed in ice and delivery only at 7 a.m., because at that time will he open his refrigerator for heat affected supplies. Again, his cereals must come in cartons just 5 x 7 in size and labeled specially on ends

because his larder shelf is 7 inches deep and 10 inches high and the cook may be illiterate. Bills must be rendered in triplicate because Smith, wife and steward desire both individual and committee action. He must present bills on the first Saturday after the second Monday of each month, regardless of grocer's financial engagements elsewhere, &c.

Probably no greater system prevails than that ordained by our strong railroad corporations. Their auditors deal with accounts only. They are without an acquaintance with the heads of numberless substations for merchandise, disbursement and purchase accounts. Yet their order forms are simple. The only "unusual" request is for bills "on their forms." The verbiage is terse, and a commendable feature is the similarity of forms of the various roads. One is impelled to duly acknowledge our great traffic systems as pioneers of good office order and purposeful printed matter.

The weakness of "absolutely automatic" forms lies generally in their lack of simplicity. Plainness is a virtue worthy of unlimited culture. Facts are simple things plainly registered. Probably no better illustration of the worries that are unconsciously created may be had than an exact reprint of details appearing in one day's orders upon a concern whose willingness to serve is thus sorely tried:

### READ THIS.

DUE  
ORDER  
TERMS  
SHIP  
FILE  
FOR  
DELIVERY

We reserve the right to refuse to accept or pay for goods delivered on this order unless conditions and instructions mentioned in order are complied with.

1. Give acknowledgment slip the attention requested.

2. Show order and requisition numbers on invoice and either on goods or tags. Send **signed** bill of lading showing order and requisition numbers, routing and car numbers in all cases at once on shipment. This is not a formality but an absolutely essential feature of our system.

3. Invoices must apply on **one** order only.

4. Where memorandum shows on order pertaining to sending of our yellow manifest slips (which will only appear in cases where shipment is ordered consigned to some other point than Akron) give it attention requested.

5. We will not assume payment for goods delivered by authority other than this form or our local form of order.

6. Unless previously agreed, we will pay no boxing or cartage charges.

7. We will consider terms herein fully and finally accepted unless objection to same is received at time we receive acknowledgment slip.

We beg to call to your attention that each of our regular order blanks you receive is numbered. The number **includes** the initial preceding.

We are considerably inconvenienced by the non-attention to our particular request on every order to **"GIVE THE NUMBER** in making **ANY** references to **THIS** order on invoice or correspondence."

It is necessary for us to carefully follow up our orders, and to do so plainly and expeditiously we are obliged to index and number them.

Will you kindly oblige us by giving attention to this small detail?

PLEASE ENTER OUR ORDER AS PER SPECIFICATIONS GIVEN BELOW, CAREFULLY OBSERVING THE FOLLOWING INSTRUCTIONS:  
SHIP TO

VIA.

PUT ORDER NUMBER ON INVOICE.

MAIL INVOICE WITH BILL OF LADING ON DAY OF SHIPMENT.

THIS ORDER MUST NOT BE FILLED AT HIGHER PRICES THAN LAST QUOTED OR SO CHARGED WITHOUT ADVICE.

NO CHARGE ALLOWED FOR BOXING, PACKING OR CARTAGE.

ACKNOWLEDGE RECEIPT OF ORDER AND ADVISE US WITHOUT FAIL WHEN YOU WILL MAKE SHIPMENT.

Your invoice covering shipment of \_\_\_\_\_ on account of our order No. \_\_\_\_\_, Req. A. V. \_\_\_\_\_, is being held at this office because of your failure to comply with our shipping instructions. Kindly forward two copies of B/L at once, and oblige,

**NOTICE.**—If the order is to be sent to any other place or person than to the undersigned at this point, state on bill to whom and to what place goods were shipped. If goods are ordered to be shipped to any other point than \_\_\_\_\_, send bill with Bill of Lading attached to the undersigned, and send **Duplicate Bill of Lading** to the designated consignee. Send a bill for each shipment (not waiting to complete the order) on your own bill head, with a bill of lading. Unless you can fill the order at once send a letter of advice. If there has been any change in price of goods since your last quotation mentioned above, notify us before filling order unless instructed otherwise. Always put the Number of this Requisition on your invoice to us, otherwise we shall return your invoice to you.

N. B.—PLEASE REFER TO THE ABOVE REQUISITION NUMBER IN ALL CORRESPONDENCE.

WE PAY NO CHARGES FOR BOXING OR CARTAGE.



The following instructions are mutually advantageous to your house and to ourselves, and we ask that your best attention be given thereto.

Goods to be closely and securely packed in least cubic space.

Memorandum of net and gross weights, measurements and contents of each package to accompany invoice.

A bill of lading or duplicate receipt, showing complete marks and numbers, to be sent immediately after each shipment by freight.

Packages sent by mail or express must have full shipping marks and numbers on them in addition to our name and address and must be prepaid.

All packages to be plainly marked with complete marks and numbers, as given in our order, and gross and net weights and measurements of each package to appear thereon.

#### THIS ORDER IS PLACED UPON THE FOLLOWING CONDITIONS. DELIVERY

Acknowledge receipt of this order by return mail and state when the material will be shipped. Delivery must actually be effected within the time stated.

#### SHIPMENT:

All material must be forwarded by the particular route named, otherwise the difference in freight and extra cost of cartage will be charged to your account. All barrels, boxes, packages, bar iron and steel must be marked with your name and with our order number.

#### INVOICES:

An invoice bearing number and initials of the order must be sent at the time of each shipment, accompanied by a bill of lading. In billing bar stock be sure that the number, size and weight of each kind appears on the bills.

**IMMEDIATELY AFTER MAKING SHIPMENT, DETAILED TRIPPLICATE INVOICE MUST BE SENT TO THE PLANT WHERE MATERIAL IS CON-SIGNED. BILL AND DUPLICATE, DETAILED LIKE INVOICE, MUST BE FORWARDED TO PUR-CHASING DEPARTMENT.**

**JOB AND ORDER NUMBERS AND DESTINATION, MUST BE DISTINCTLY SHOWN ON ALL BILLS.**

**THIS ORDER NUMBER AND DATE OF SAME MUST APPEAR ON INVOICE.**

**SHIP BY FREIGHT, UNLESS OTHERWISE ORDERED.**

**ALL GOODS FURNISHED ACCOUNT THIS ORDER TO BE DELIVERED TO OUR SATISFACTION AT DESTINATION.**

**NO CHARGE FOR BOXING, CARTAGE, OR TRANSPORTATION ALLOWED UNLESS BY AGREEMENT.**

### BILLING INSTRUCTIONS FOR SHIPMENTS TO

MAIL ORIGINAL BILL to \_\_\_\_\_ St.,  
N. Y.

MAIL DUPLICATE BILL WITH PRICE and EXTENSION, and MEMORANDUM BILL WITHOUT PRICE, and BILL OF LADING to Branch to which goods were shipped.

Mark ORDER NUMBER, CONTRACT NUMBER and MARK on all Bills.

GENTLEMEN:—Enclosed find invoice which you have put us to the inconvenience and expense of returning. You would save us this bother by conforming to the instructions printed on each order as follows:

MARK each Bill and Package as follows:

Req. or Order No. \_\_\_\_\_ Job Order \_\_\_\_\_ Dep't \_\_\_\_\_

Ordered by \_\_\_\_\_

Ordered for \_\_\_\_\_

Send all Invoices to \_\_\_\_\_ for each order the day goods are delivered.

EACH INVOICE TO STATE ORDER NUMBER.  
RENDER ALL BILLS IN TRIPPLICATE.

This card **MUST** be filled out and returned immediately to \_\_\_\_\_

Order No. \_\_\_\_\_ Slip No. \_\_\_\_\_

Will be Shipped \_\_\_\_\_

Remarks: \_\_\_\_\_

(Sign here.)

Date of shipment must be definitely given. If order cannot be shipped entire, advise us before making partial shipments.

#### Read carefully before entering this order.

This order must not be filled at higher prices than last quoted or charged, without advice.

No charge for boxing or cartage will be allowed.

Send notice of each shipment and bill of lading.

Make separate invoice for each order.

Render all invoices promptly in duplicate.

Indicate on invoice discount for monthly or 10 day settlement.

All invoices on which there is no discount allowed will be paid on the 20th prox.

Send monthly statement of account to Auditor.

Address all communications care of Purchasing Agent.

#### SHIPPING AND BILLING INSTRUCTIONS.

The OFFICIAL CLASSIFICATION requires that ALL MACHINERY shall be securely crated or boxed to secure the second-class rate of freight and this classification applies to all goods shipped from points East of Illinois.

The WESTERN CLASSIFICATION applies to all machinery from points West of Indiana and reads as follows: "Wood Working Machinery, on skids; small detachable parts removed and boxed" will secure first-class rate of freight, and the exact words quoted should be used upon the shipping receipts and goods must be packed in accordance therewith.

Iron Working Machinery. Different machines of this character are classified in various ways and it would be well to study the Western Classification. Crate or pack goods and bill goods in such a manner as to secure the lowest rate of freight.

The above does not apply to CAR LOAD SHIPMENTS.

Be sure to MARK the goods fully via the routes indicated and INSERT THE ROUTING in the Shipping Receipt and Bill of Lading.

Have the weight and through rate of freight inserted in the Bill of Lading and send Bill of Lading promptly to us.

Where can be found a stronger appeal for the revision of a wrong? Does not the complexity of individual desires suggest mental embarrassment for the best order clerk alive? Surely no contra system for recording the demands of such detail can be provided without becoming similarly burdensome. Should you argue that the retention of such matters becomes mechanical you must guarantee that your form of order will never be altered, otherwise new trouble will arise. Again, the invasion of demands for "duplicate and triplicate bills and bills of lading," for "bills on your forms only," for "use of your shipping tag," and the numerous required inscriptions of your details on his forms, means a great loss to him in efficiency of a number of men in several departments. The entry clerk can best serve with "straight" orders. The bill clerk will produce from 25 to 50 per cent. more work if allowed to use his book typewriter on his own forms. The shipping clerk's time should be employed alone in securing bottom freight rates for you and in the natural duties of the position.

Is it not possible to keep "the extras" at home? Will an "Order Monitor" avail in the preservation of individual ideas of system for your own office? An idea seems to evolve in this way:

An original order form, simple in details:

Date January 1, 1903.

Please ship at once.

Via Penna. R.R.

To Wilmerding Station,

At Pittsburgh.

Order No. 2002 on Pkge., Bills of Lading and Invoices.

Invoices in duplicate and promptly.

Duplicate order form with same and all further necessary-to-your-system details to the monitor.

Monitor notifies on suitable form your department foreman and receiving clerk with details of purchase, prices excepted, and cites your order number.

When material or supplies require hurrying all departments confer with monitor, referring only to order number, which conveys to all the history of purchase.

Monitor writes, wires or 'phones order number and date to source of supply, requesting adequate attention to your needs.

Shipper invoices by order number.

Monitor receives invoice and by order number informs proper departments of shipment.

If memorandum of shipment seems desirable monitor should provide by copying invoice.

When received, clerk, from the order number on the package, refers to monitor's notification slip and disburses according to instructions thereon, &c.

Somewhere there is lurking a Golden Rule: "The greatest pleasure is in doing a good action by stealth and having it found out by accident."

**Fresh Interest in Tin Mining.**—The one metal absolutely necessary in the production of staple manufactures which has not been produced in this country to any extent is tin. Attempts have been made quite frequently to develop the deposits of this metal which have been discovered in various sections of the United States, but in almost every instance the deposits have either proved too lean to work satisfactorily, or the companies undertaking the problem of conducting operations have not had sufficient capital. It is interesting to note that renewed attention is now being displayed in this direction. Companies have been formed for operating in South Dakota and Southern California, and they are announcing with confidence that they have not only satisfactory deposits of tin ore, but that sufficient capital has been secured to enable operations to be successfully prosecuted. It is to be hoped that the expectations entertained by these companies will be realized, and that this year may see tin produced on a commercial scale in the United States. This country is the largest consumer of tin in the world, and it would be decidedly beneficial to the consuming interests if this essential metal could be produced at home.

### The Ruthenberg Process at Lockport.

On Thursday last a party of iron manufacturers visited the plant of the Cowles Electric Smelting & Aluminum Works at Lockport, N. Y., where there is installed what is erroneously called an electrical furnace. The apparatus is the invention of Marcus Ruthenberg of Philadelphia and really is capable of performing two functions, that of agglomerating or fritting fine ores, concentrates or flue dust so as to put them into much better condition for charging into the blast furnace, or that of reducing the iron oxide to what may be termed a sponge, to be employed as a raw material in the open hearth furnace. The apparatus consists of a horizontal horseshoe magnet hinged so that its poles may be approached. The poles are surrounded by water cooled bronze rolls covered with carbon plates, which rotate in opposite directions. Along the line of closest approach an electric arc is formed which subjects the material to be operated upon to a high temperature. The material is fed upon one of the rolls and is thus carried to the active zone, dropping out of the reach of its influence as the revolution of the roll carries the material beyond it.

The test of the apparatus last week was witnessed by John Fritz of Bethlehem, Pa.; S. T. Wellman of the Wellman-Seaver-Morgan Engineering Company, Cleveland, Ohio; W. J. Taylor of the Taylor Iron & Steel Company, High Bridge, N. J.; Edwin Thomas of Catsauqua, Pa.; J. K. McLanahan of Hollidaysburgh, Pa.; Frank Slocum of the Jones & Laughlin Steel Company, Pittsburgh, Pa., and J. B. Kraemer of the Kittanning Iron Works.

A number of experiments were made. Among them was one with Lake Champlain magnetite concentrates, both alone and with an admixture of cast borings. When the ore does not possess magnetite properties to a certain degree Mr. Ruthenberg uses cast iron borings in order to create the arc, the percentage varying with the circumstances. When putting the ore through the machine alone the action is sluggish and the capacity suffers. The result of this operation is a fritted material which is in much better shape mechanically for charging into the blast furnace than the crude ore. Mr. Ruthenberg makes the important point that during the exposure of the ore to the action of the electric arc a considerable part of any sulphur in the ore is eliminated.

A somewhat more interesting operation is the direct reduction of iron ore in the electric arc. The fine ore is mixed with carbon in a suitable form, and if desirable cast iron borings are also added. Exposure of the mixture in the electric arc causes a reduction of the iron oxide and there drops from the rolls a coarse, partly sintered material, which is largely iron in metallic form. This product is employed in the place of scrap in the open hearth furnace, one charge having been made with it at a leading steel plant.

The rated capacity of the machine at Lockport is about 2½ to 3 tons of material per day of 20 hours, but we understand that a larger machine, with rolls three times as long, is being built which it is expected will reach a capacity of 10 tons per day. The electrical energy required for the Lockport machine is about 25 horse-power.

The statement is made, apparently on authority, that although the original plan for the consolidation of the malleable iron casting plants of the United States has been abandoned, the promoters of the scheme have not entirely given up the project. They now propose to form a consolidation, which will include probably half a dozen of the largest and best paying plants in this line, whose capital will represent the actual worth and value of their properties. The original intention was to take into the consolidation every malleable plant, even though it might be quite small.

The Eastern Felt & Buffing Company, Winchester, Mass., manufacturers of polishing and grinding machinery, have moved their Boston office to 151 Congress street.



### Chairman Knapp on Combinations.

Chairman Martin A. Knapp of the Inter-state Commerce Commission made an address before the Arkwright Club, New York, January 16, from which the following extracts are taken:

The truth is that new conditions have arisen and new methods must be adopted. The world is searching for economies. It is intolerant of needless expense. The way a thing can be done the easiest and cheapest is the way it is bound to be done and the way it ought to be done.

We want the best results and find that they come from combination. The old aphorism "in union there is strength," takes on a new meaning. It is the law of growth and increase. It applies to industries as well as to individuals. Thus the potent agencies by which distribution is now so rapidly and cheaply effected, which so combine and intensify the forces of production, are fast altering the conditions and changing the character of industrial development. And the end is not yet; it outruns imagination.

To-day the great enterprises of the world are in the hands of corporations, and the time is fast approaching when they will absorb all important undertakings. Why? Simply because the railroad and the steamship—cheap and rapid transportation, all the while growing cheaper and quicker—ever widening the area of profitable distribution, furnish the opportunity, otherwise lacking, for the employment of larger and still larger capital. This opportunity permits and encourages the concentration of financial resources; so that, within limits not yet ascertained, the larger the business the greater its possibilities of gain. But the legitimate, the inevitable offspring of corporations is monopoly. Why? Simply because the operation of these massive forces—impinging and grinding upon each other in every market of the world—begets an extremity of mutual danger which always invites and often compels a common agreement as to prices and production; that is, a trust. Just as the implements of warfare may become so devastating in their effects that nations will be forced to live in amity, so the destructiveness and exhaustion of commercial strife in these larger spheres of action will make combination a necessity.

Meanwhile, we have the exactions of monopoly, the feebleness of legal restraints, the heaping up of fabulous fortunes, the prejudice of the ignorant, the envy of the incapable; and through all and over all the inappeasable voice of labor demanding, not without reason, a larger share of the wealth which it produces. The advent of industrial association is attended by the mammoth corporation and the billionaire syndicate. But till we have found some better way to provide the capital for great undertakings, some more efficient way of doing the world's work, we may well restrain our envy and our fear of the financial magnate.

Let us not denounce, but discriminate. The combines that are formed to pluck credulous investors, or to force extortionate profits from a helpless public, are justly regarded as the enemies of honest enterprise. Their promoters are commercial buccaneers, whose condemnation cannot be too severe or punishment too swift. But you would not sweep all ships from the sea merely to get rid of a few pirates. Rather, you would multiply the ships, yes, subsidize them, if need be, and meanwhile hang the pirates!

But there is another class of men, the true captains of industry, who command our admiration. With rare provision they plan great projects and push them to splendid fruition. Their genius for organization turns discord to harmony, and brings order out of chaos. They simplify methods, work out economies, expand and cheapen production, better the condition of labor and give permanency to business advancement. They are the leaders of an industrial evolution which excites the wonder of the world, and their achievements are doing more than anything else to assure the prosperity and increase the prestige of the American Republic.

We have settled the administrative questions; we can collect taxes, build court houses and pay the policemen. We have settled the political questions; the nation

lives and will live, the greatest and grandest in all the earth.\* But the further test is now to come, the test of the ocean liner and the limited express. Can we settle the economic questions? Can we raise this wide realm of industry from selfishness to charity, from strife to friendship, from competition to co-operation, from the warring instincts of the savage state to the larger and nobler needs of associated life?

This is the problem of railroad and steamship, of telegraph and telephone, of the subtle and limitless forces of modern life, the problem which will test the wisdom of statesmanship and tax the resources of public authority.

### The Chicago Pneumatic Tool Company.

As a result of the trip of the Committee on Plants recently appointed by the Board of Directors of the Chicago Pneumatic Tool Company it seems probable that the capacity of the plants will be doubled during the coming year. At least this is the recommendation of the committee which will be officially presented to the directors at the meeting to be held in New York City late this month. To accomplish the proposed enlargement it is recommended that large improvements be made at Detroit. It is also proposed to move the Aurora plant to Cleveland, where large additions to the buildings are nearly completed. Methods of easing the strain on the Franklin, Pa., plant are also suggested. The plan of the committee contemplates the ultimate concentration of the factories in the three plants at Detroit, Cleveland and Franklin, Pa. Immediate construction of the Scotland plant is also requested.

The first annual statement of the company is being prepared and will be presented to the Board of Directors at the meeting previously referred to, after which the prominent features will be made public. It is known that the month of December, 1902, was the month of highest record, earnings having been 40 per cent. larger than during any other month in the history of the company.

The second annual reunion of the representatives of the company in the United States and Canada was held at Chicago, January 12 to 14 inclusive. It is the policy of the company to bring the selling and manufacturing departments of the business into closer touch, that each may profit from the experience and suggestions of the other. This plan has been followed by success in the past and seems to be pregnant with great results for the future, it being estimated that through this co-operation a much more efficient service is secured, as well as promoting harmony and good fellowship. During the reunion the exhibit rooms of the company were visited by the various representatives, where demonstrations were made of new tools which were being brought out and an inspection made of various improvements contemplated on other machines being built by the company.

On the night of the 12th a banquet was tendered to the representatives by President J. W. Duntley at the Union League Club. Numerous toasts were responded to by many of the representatives, and at an opportune time Charles Booth, manager of the Chicago office, on behalf of the sales department, presented to President Duntley a loving cup, upon which was inscribed "Presented to John Wheeler Duntley by the Sales Department of the Chicago Pneumatic Tool Company, January 12, 1903." Vice-President W. O. Duntley was presented with a gold match case, set with diamonds. Each of the recipients responded appropriately, thanking the employees for their good will and hearty support given during 1902. Judge Steere congratulated the management on the achievements as shown in the business of the company during the past two years.

The statement is made that the Compañía Industrial Mexicana, now operating a foundry and machine shop in Chihuahua, Mexico, will be reorganized and recapitalized by an American syndicate having the backing of New York banking houses. Enrique C. Creel of Mexico is one of the principal owners.

## Overhead Tramrail Systems in Shops and Foundries.\*

BY A. W. MOYER OF PHILADELPHIA.

In every manufacturing establishment the system inaugurated must of necessity embody many principles

to reduce the cost of their products in order to secure commercial advantage, the reductions when obtained usually going to the consumer and leaving the producer with fresh problems to face in the way of devising further means to continue the cheapening process. The component parts of a finished product are, first, material; second, cost of labor; third, running expense of business.

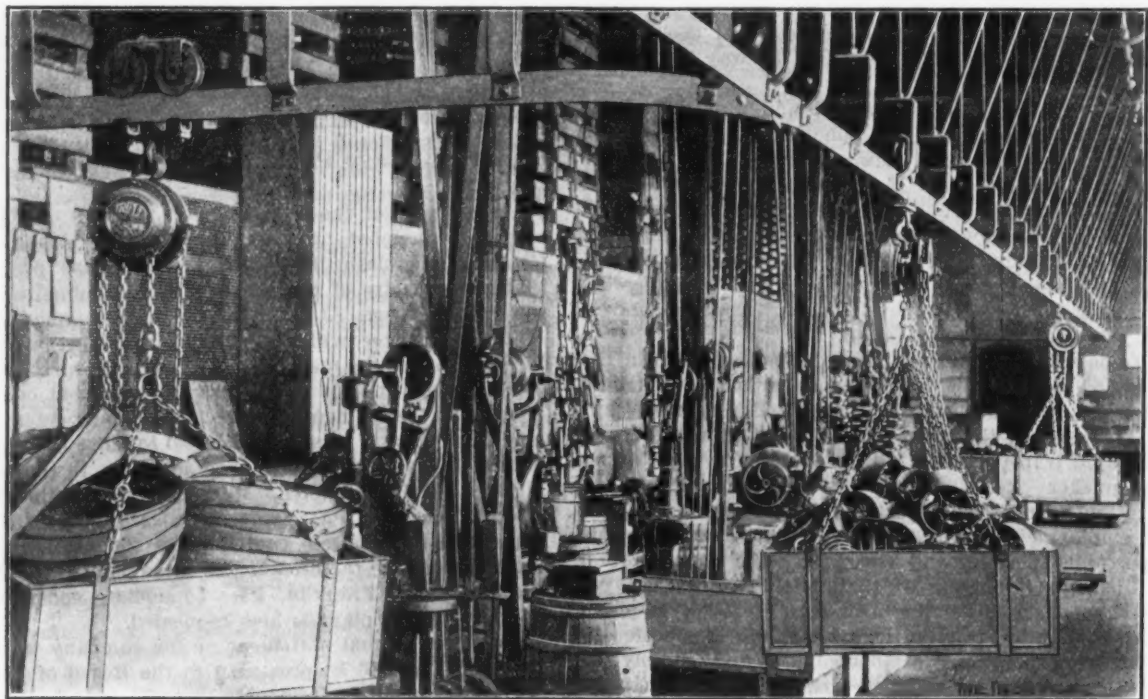


Fig. 1.—A Philadelphia Works. Bringing Material to Drilling Machines.

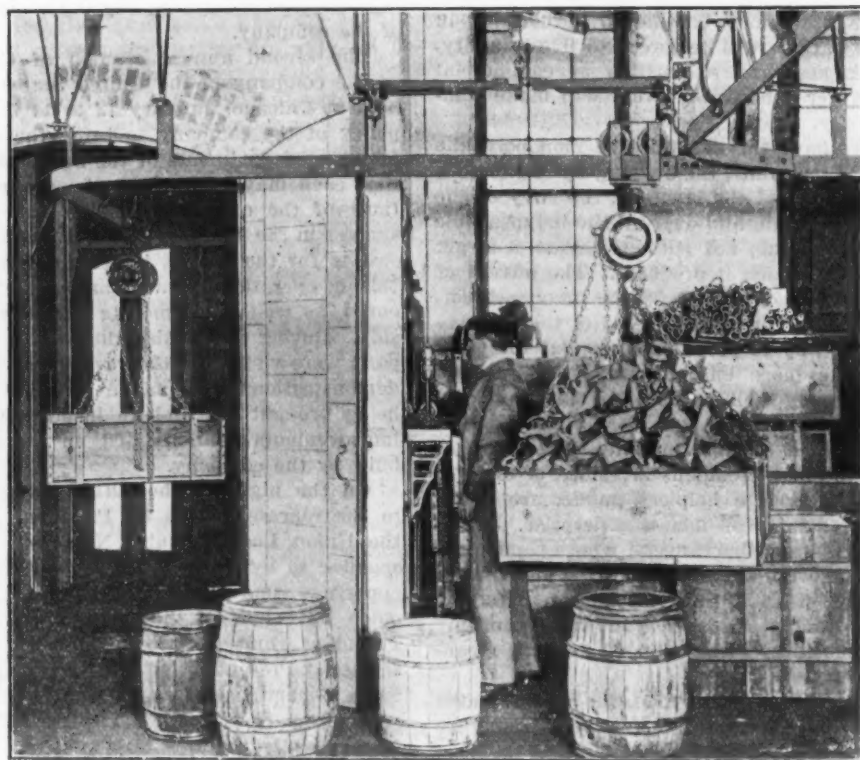


Fig. 2.—A Philadelphia Works. Arrangement for Weighing.

### OVERHEAD TRAMRAIL SYSTEMS IN SHOPS AND FOUNDRIES.

and practices tending to reduce to the utmost the manufacturing cost of the product. With the keen competition which exists in nearly all lines of business today, manufacturers are constantly endeavoring to re-

Material is as staple in its cost as the sun, and whether it be iron or wheat, good or bad, it has a commercial value which is fixed according to the market in which you buy. If you have A1 credit and a thorough knowledge of your business, you can readily realize that no one in the competitive line is cheapening his

\* Paper read before the Philadelphia Foundrymen's Association, January 7, 1903.



product at this stage of the commercial game. The next step in progression is the cost of labor. It is in the employment of labor that most of the problems requiring serious thought are to be met with. Mechanical devices which can be employed to do away with hand labor or to diminish cost, as you are aware, are continually being introduced into all up to date manufacturing plants, and as I have said that in labor the most seri-

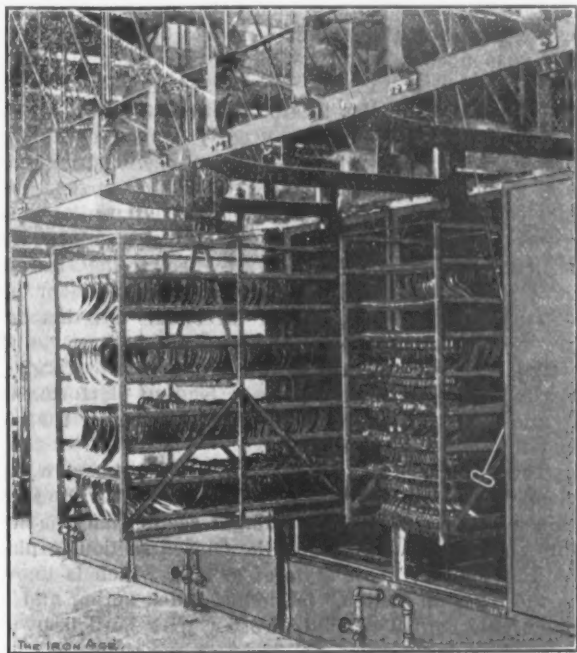


Fig 3.—A Philadelphia Works. Arrangement for Serving Ovens.

cost of installing such a system is insignificant in comparison with the labor saving effected by its use. Plenty of instances are on record where the entire cost of a tramrail system, quite extensive in character, has been saved in one year in labor economies alone, while the saving in time, the increase in manufacturing facilities, the simplification of the shop system and the increased floor space would place the shop far on the debtor's side of the installation account. A description of a tramrail system might well be given you at this time, but will not be exhaustive in its account, but simply to describe the kinds of rail most used, and I will show you one section of a room with high ceiling. [Lantern slides were shown here.]

The track is of flat rail and is hung from girders by means of iron rods so braced that it is impossible for it to sway or sag. This track is 7 feet 2 inches in height; that is, from the floor to the bottom of the track, but in cases where ceilings are low, or it is desired to have the track high enough to convey larger articles of manufacture, the hanger feet alone are used without rods or braces. The hangers are made of any length desired. The capacity of this flat rail track is 2000 pounds, and that amount of weight can be raised and conveyed to any part of the shop by one man. The other view I desire to show is a system in which I-beams are used. This style of track is universally used where the weight to be carried amounts to tons. You can readily see why this should be. The I-beam, as is plain to be seen, would have greater sustaining capacity than a flat rail.

#### Simplification of a Shop System.

It has been stated to you that, by means of tramrails, the shop system may be materially simplified. One very striking instance of this, as well as a direct saving in labor, outside of the mere conveying feature of a sys-



Fig 4.—A New York Foundry. View in a Large Molding Shop.

#### OVERHEAD TRAMRAIL SYSTEMS IN SHOPS AND FOUNDRIES.

ous problem confronts you, I am prone to believe that any system devised, by means of which can be shown a curtailment or a lessening of this problem in any way, will be given serious consideration by you.

#### Overhead Tramrail an Important Labor Saving Factor.

An important factor in the labor cost in establishments where there is much handling of the product in different stages of manufacture is a system of overhead tramrail, by means of which goods and materials in quantities, to move which ordinarily necessitated the employment of several laborers, may be quickly and easily conveyed to points anywhere along a shop floor, or from floor to floor, by one man, or even a boy. The

tem, is fresh in the writer's mind. A large company engaged in the manufacture of a line in which innumerable small iron parts entered were running their factory on the piece work plan. To determine the amount of each employee's day's work a number of overseers were employed to collect, count and tabulate the different pieces turned out at each bench. The cost of this supervision was a direct expense to the shop, and aggregated upward of \$3000 per year. With the introduction of a tramrail system, it was suggested that each man be provided with a tote box or receptacle for his work, and when his box was full that it be carried by rail to a point in the system where a tramrail scale



had been installed, and there weighed, and the weight of the castings, less the tare of the box, credited to the employee. A weight basis covering, say, 100 or 1000 pieces having been previously determined, the matter of getting an absolutely correct credit would be easy. The suggestion was acted upon, and during the time the system has been used one man has been able to do the work formerly requiring several, and there has been no friction in the shop due to differences in count. This checking feature of a tramrail system will be illustrated in the description of a very complete shop arrangement which will follow these remarks.

In machine shops and foundries tramrail systems are being used to eminent advantage. Even where there are plenty of crane facilities it is obvious that crane service cannot often be extended at one time to more than one part of the floor or machine. A tramrail sys-

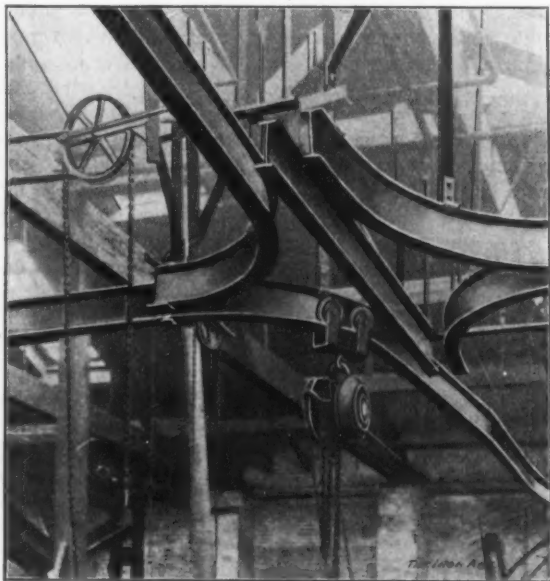


Fig. 5.—A New York Foundry. The Switching Arrangement.

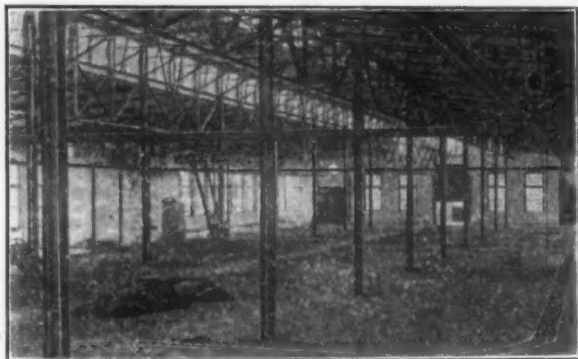


Fig. 6.—A Bridgeport Foundry. General View.

#### OVERHEAD TRAMRAIL SYSTEMS IN SHOPS AND FOUNDRIES.

tem can be used by a hundred or more at a time, the use of switches and side tracks removing any trouble which might be due to temporary blockage of the system.

#### Description of the Moyer Tramrail System.

The Moyer tramrail system, which is the system presented to you this evening, is in use in many of the largest industrial plants in the country. J. W. Moyer & Co. of Philadelphia, the designers and builders of the system, some 13 years ago started a business dealing entirely with overhead tramrail systems, and during that time have laid out and installed systems in thousands of plants, many of which were extensive and elaborate. A short time ago they designed and installed a system in the works of a large concern here in Phila-

delphia making agricultural implements. The immense quantity of small cast iron parts entering into these goods entailed a very large amount of handling in different departments, and as the tramrail system there installed is a good example of an all-purpose shop system, photographs of the same are used to illustrate this paper. [Lantern slides were shown.]

The view shows the rail in use in the main shop on the ground floor. In this case the flat rail is used, the rail being made of 3 x ½ inch flat bar iron. The hangers, which are of wrought iron, are bolted to the rail and suspended from the ceiling by rods ⅝ inch in diameter. The section of rail seen is 180 feet long, with a switch at right angles located about half way. In this department material in the early stages is handled preparatory to going to the floors above. Large boxes are used for collecting the material, and these are hoisted from the floor by means of differential chain blocks suspended from the traveler or trolley. The trolley is the regular Moyer two-wheel trolley, running on antifriction bearing wheels. A slight push or pull will propel the load in either direction. On this floor are the racks or bins in which the small parts are stored. These parts, consisting of castings or forgings, are received in the rear from a loading platform, and by means of the tramrail system are run near the bins and the boxes unloaded.

The view, Fig. 1, is the upper half of the view just given, and shows material brought to the drilling machines. At the switch the straight section may be seen thrown out of the way, and the curved section in place for the cut out. This style of switch, which is known as the "lift up switch," is simple, quick acting and reliable, and cannot get out of order with hard use. All three ends of the rails are closed at one time, thus preventing the probability of a load being pushed off the rails, an important feature when heavy loads are being carried. Any length of hangers may be used with this lift up switch and almost any number of rails may be connected. The same switch may be used where it is required to cross two rails at right angles, and when the rail is located at a high point the switches are operated with a long pole hook. The blocks shown are of the Yale & Towne pattern.

After grinding, the material passes along to the scale seen at the end of the department in Fig. 2, and thence to the elevator in the corner, which carries it to the floor above. The Moyer tramrail scale, which is clearly shown in this view, weighs all loads without their leaving the track. The "piece work check system," previously mentioned, is employed in this establishment and the weighing of a load is seen in progress. The scale is tested to the United States Government standard, and is supplied in various capacities ranging from 1000 to 3000 pounds. After weighing, the load is taken along the tramrail to an elevator and raised to a system on the floor above. The elevator has a section of rail on it and connects with the rail on all floors.

One of the most interesting features of the system is the arrangement for switching parts required to be painted or enameled into the painting room and thence to the ovens. Fig. 3 shows one of the ovens open, with two cars coming out. The switching devices are very simple, the lift up switches employed elsewhere in the system being used here also. After a car has entered the oven the track opening in the oven front is closed by a hinged stop, so that the oven is perfectly sealed. The forms of carriers for oven work are perhaps of interest. One of them is shown loaded with freshly painted parts ready for baking. The loading is done at the spot where the parts are painted or dipped and there is no rehandling until baking is completed and the carrier arrives at the assembling benches. Some idea as to the number of pieces carried in one load is also obtained from this view, the load shown weighing 1800 pounds. The cars are made entirely of bar iron and serve also as draining racks for dipped goods.

In the assembling room a main line of tramrail runs completely around the room, which is 200 feet long and 80 feet wide, with a center and cross tracks. An im-

mense amount of labor was involved in keeping this department supplied prior to the installation of the tramrail system. Carriers loaded with finished parts are brought here direct from the various departments and unloaded at the different points where the finished article matures. The different sections of the department are well covered by the tracks, leaving very little handling to be done after the load is dropped. In the machine shops an auxiliary system of tracking has been introduced for handling the work on the lathes, drills and benches.

#### A New York Foundry Installation.

As an example of installations made in foundries which in their layout and construction are different from the foundries built and equipped in recent years I present one which we installed some time ago in the foundry of a New York company manufacturing bath-tubs, hoppers, plumbers' supplies and stable fittings. Some difficulties were encountered owing to the irregular construction of the building. It was a case of adapting the tramrail system to the building, rather than the building to the tramrail. In striking contrast is the system in a Bridgeport foundry, which I will describe later, where the building was planned for the tramrail. In the New York foundry an I-beam system is used, that system, as before stated, being better suited for carrying heavy loads and molten metal. The trolleys have wheels on both sides of the track, so that it is impossible for them to lose their base.

The foundry comprises practically four large molding shops, one cupola supplying all four. The shops are quite large, and before the tramrail was put in considerable trouble was experienced, due to the cooling of the iron. A 30-ton cupola supplies all floors, and the average heat is about 23 tons per day. The cupola is located between two of the shops and is not in the most convenient location for pouring, and were it not for the introduction of a tramrail system it would be necessary to have extra cupolas to supply the demand made by an ever increasing business. The situation of the cupola is such that, in carrying small quantities of molten metal the distance necessary to work, the apparent result would be cold metal, and to have a condition like that in a plant where small articles are made, I will leave those who are familiar with this subject to figure out the loss. But there is one fact that will defy contradiction, and that is, the larger the quantity of molten metal in a ladle the longer it will retain its heat and remain in a liquid form, and the tramrail system supplies the means for bringing this condition about. The system of pouring, in this case, is simply to fill large ladles with one or two tons of metal, run them to a point in the foundry where they can be gotten at with as little trouble as possible and then pour to smaller or hand ladles, repeating this operation as many times as necessary.

In the view, Fig. 4, the large shop is shown. Here you will see the tramrail enters the shop, turns and runs the whole length of the building, serving the floors on each side. One of the old stationary cranes is also seen in this shop. The ladles are carried by triplex hoists and handled by two men. Owing to the extreme width of the building, and the consequent danger of overloading the roof girders, posts have been placed at intervals to carry any strain due to the tramrail system. Liberal use is made of the system in this building for conveying the heavier castings.

Fig. 5 shows clearly the switching arrangement where two lines of tramrail cross each other at right angles, and where ordinarily a turntable is used. In the Moyer system we never use turntables on account of their high cost, the great amount of head room required and the liability of getting out of order. Instead, two and three way switches are used, with the result that a load is more quickly handled, and the possibility of a load being pushed from the rail is entirely obviated.

#### The Advantages of the Tramrail.

These views are simply intended to give a partial idea of the many uses to which the tramrail may be

applied, but there is hardly a case where there is met a dead lift and the desire to convey that the tramrail will not answer. It is the purpose of this paper to show that wherever the tramrail is used time and money are saved.

As to labor saving, I have only to recite to you a few instances. I want to show you by some facts and figures exactly what amount of money has been saved in the plants, views of which have been shown. Let

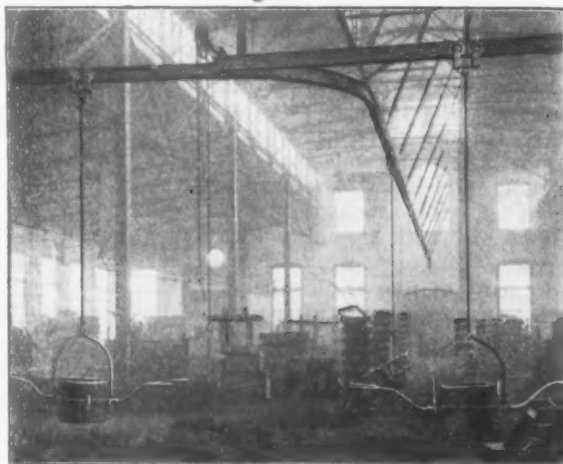


Fig. 7.—A Bridgeport Foundry. Looking Down the Center.

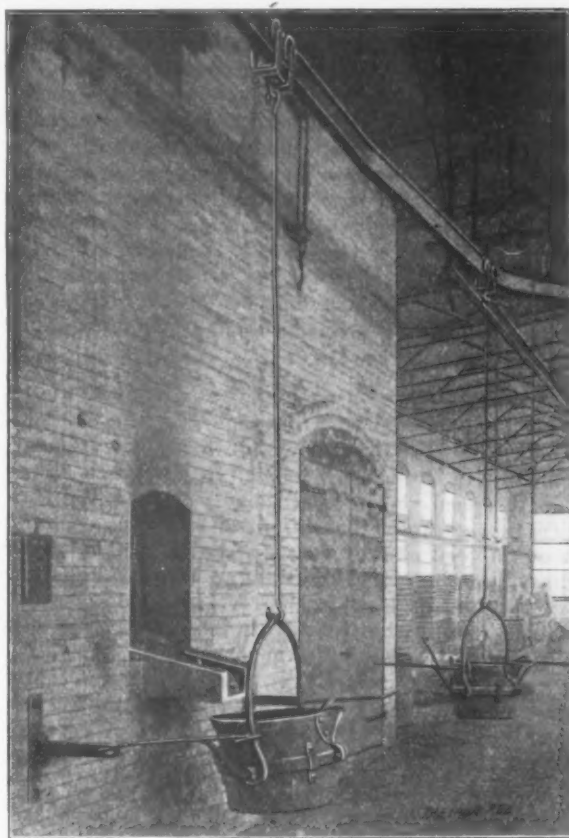


Fig. 8.—A Bridgeport Foundry. Bringing Ladles to the Cupola.

#### OVERHEAD TRAMRAIL SYSTEMS IN SHOPS AND FOUNDRIES.

us first take the plant in which the many small parts were handled. The system of tramrail erected complete cost the concern some \$2000. This included the tramrail, switches, trolleys, hoists, boxes and the erecting of the whole. Now many manufacturers figure that if they can invest a certain sum of money in their business and get a net return of 6 per cent. they are satisfied with the investment. But not only did the company get back the interest on the investment each year, but



they are saving also the principal. In fact, they are saving more than \$2120 for every year the system is used.

First let us take the counting system in vogue before the tramrail was installed. Three "counters" were employed at a total wage of \$45 per week, or \$2340 per year. These men were not infallible, they made errors in their counts, and, of course, these errors, no matter how few, were bitterly contested by the workmen, with the result that many lots had to be recounted, consuming valuable time of the counters, for which the company were paying, and valuable time of the workmen who watched the recount and checked it up. Under the new way this \$2340 is saved, the counters are employed elsewhere about the factory, producing articles upon which the firm make a profit, and the workman, knowing he is receiving full credit for every piece of work he finished by the "piece system when weighed," goes about his labor. He is able to turn out more when he is free to devote his entire time and attention to his portion of the day's work, banishing all thoughts as to how many of this or that he is making and whether he will have a dispute at the end of the day with the counter.

Again, in the painting and enameling room a great saving was made. In the past, with the old style ovens, there were required three times the number of men to enamel and hang the parts in the ovens and only one baking could be done daily. The door had to remain open until the entire oven was filled, usually taking hours. As it is now, the ovens are closed when empty, steam is turned on, but half the number of men are required to dip and hang the parts on the trees and racks, and when four trees are ready and doors are opened and the trees placed, hardly a degree of heat is lost. In this way two bakings a day are possible and there is finished double the amount of pieces with but half the labor. I regret that I am unable to give you the exact figures for this operation and saving, but you will readily understand that they were not obtainable, being secrets which the firm will not divulge. I was informed, however, that the saving in this enameling room alone amounted to more than the saving in the wages of the three counters. Placing the two savings at the same figure, we have \$4680 saved annually upon an original expenditure of \$2000.

#### Installation in a Bridgeport Pipe Fitting Foundry.

Next will be shown a few views of the interior of a new foundry finished only in July, 1902, of a large company in Bridgeport, Conn., making pipe fittings. Upon a recent visit to that foundry I was given a few facts by the superintendent which I have no doubt will be of interest, as they bear directly upon this question of saving by means of the tramrail systems. The foundry is 330 feet long by 150 feet wide and has two cupolas, separated at equal distances from each other and from the ends of the foundry.

By a test it was seen that two men were able, without undue exertion, to carry on the tramrail a full ladle, or, as they call it, a "growler," filled with 1500 pounds of molten metal, from either of the cupolas to either end of the foundry in one minute. When told this, I am afraid I showed by my countenance that I was a trifle incredulous of this statement, and the superintendent insisted the test be made in my presence. It was done, and I saw only what any of you would see if you were to visit that foundry on any working day. Now it would take two men double or triple that time without a tramrail to carry a ladle holding but 150 to 200 pounds of metal. In other words, two men were carrying in one minute a load which, if divided up into 150-pound ladle loads, would have taken 20 men twice the time to carry by hand.

Laborers in the foundry are paid \$1.50 per day, and it is this class of laborers who run the ladles along the track. Only 12 laborers are employed, at a total daily wage of \$18, or \$5400 per year. If, to put it at a minimum, only three times the amount of labor were required if the tramrail system were not used, the wage would be \$16,200, and by subtracting \$5400 from that sum

we find that if the 12 laborers worked all day at carrying the ladles there would have been a saving of \$10,800. But as by means of these 12 men and two cupolas 52 tons are poured in two hours, and as the day is an eight-hour day, the actual yearly saving in this item alone is \$2100. There are a dozen different ways in which labor as well as time in this plant is saved, many of which must be apparent to you all. The system cost the firm \$3000, and the president of the concern informed me within the past few days that they had actually saved the first cost in half a year's run.

The view, Fig. 6, shows to good advantage the Bridgeport foundry in its entirety. The foundry floor is nearly clear, having only a double row of posts. A double skylight runs the length of the building, operated by one wheel and chain from one end. It was found, however, that better ventilation could be obtained by cutting this operating device up into four, consequently each row 330 feet long was divided into four sections.

Especial attention should be called to the extreme height of the roof truss to which the hangers were attached. From the floor to the roof was 36 feet, and the Y-hangers shown in this view were 20 feet long, making the track 16 feet from the ground. These Y-hangers were made of bar iron, twisted and well braced. At the I-beam they fasten with a clamp on top, and are clamped to the roof truss as well. This makes a very substantial method of hanging an I-beam rail. There is little or no side sway or vibration while the load passes along the system. The arrangement is well shown in Fig. 7.

Fig. 8 shows the front of a cupola with the ladle suspended from the tramrail ready to receive the molten metal through the spout. Here will be noticed the simple hinged pieces, fastened to the brick work, which hold the ladle firmly in place while being filled, preventing the possibility of spilling, and which are easily folded back against the wall when not in use. The switch will be seen thrown for the curved rail connection, with an empty ladle waiting to be run under the spout to be filled.

In this connection I want to say that J. W. Moyer & Co. have a contract to connect the six ends of the three runs in this foundry, and when this is done the system will consist virtually of two continuous loops with branches, each loop designed to convey the metal from one cupola only, although being so connected as to be able to reach any part of the foundry floor from either or both cupolas. When this is done, in my opinion, this foundry will be one of the best equipped foundries it has been my privilege to see—best equipped, let me say, along the lines of conveying molten metal to the molders, and taking the castings away from the molders when finished.

There are a number of tramrail systems on the market, and it is not my purpose to-night to speak of the superiority of any particular make of system. I firmly believe that no matter how poor the system, no matter whose make, a tramrail system of almost any kind will be of vast benefit in nearly every foundry. As to the relative merits of different styles of tramrail systems I will say, however, that those of the iron foundries who have used systems of different kinds are a unit in the opinion that an I-beam system, no matter whose make, is by far the best all round system made to-day. You should bear in mind that no two systems are alike, but each must be adapted to the special requirements of that particular foundry in which it is to be used. One may save in one direction and one may save in another, but with the proper use of the proper system I feel sure that the system in one year will return to its purchaser dollar for dollar of its original cost, with a few extra dollars thrown in for good measure.

The total mileage of railways in Russia on September 1, 1902, was 37,319 miles, of which 6387 miles were double track. There are 4921 miles under construction by the Department of Ways and Means of Communication, and 1582 miles by the Chinese Railroad Company. Besides this 2194 miles are planned.



## The Outlook for Bars.

More than usual interest centers in the establishment of official prices for iron and steel bars for the 1903-1904 season. This is especially notable among large consumers, there being a quickening in the trade which is not apparent superficially, but it may be taken for granted that producers are as keenly interested as are the large consumers. In fact, there is evidence that the large producers are taking a record of the trade pulse in the Central West. Because of these facts it is interesting to glance over the record of prices of bars for the last decade, and to make the outlook clear a table is herewith presented showing the prices current at Chicago for mill shipment on the first of each month for the last ten years.

From this showing it is evident that the lowest prices for both iron and steel bars during the period referred to were made in the summer of 1897. In July of that year the market fell to the lowest point, being 1 cent, Chicago, and 0.90 cent. Pittsburgh—iron and steel selling on the same basis. During the latter part of 1899 and the early part of 1900 the highest levels were reached, the extreme point being in November, 1899, when steel bars were quoted at 2.45 cents, Chicago, and bar iron at 2.30 cents. But for several consecutive months in the season of 1899-1900 bar iron continued at the same level, while steel, although relatively high, did not again reach the high point of November, 1899.

In this connection it is interesting to note the prices prevailing for scrap material, especially the grades entering into the production of common bar iron. On July 1, 1897, borings were selling at \$3.50, axle turnings at \$6, machine shop turnings at \$4.50, heavy melting steel scrap at \$7.50, and No. 1 railroad wrought at \$9.50 per ton. On February 1, 1900, No. 1 railroad wrought had risen to \$23, cast borings and mixed borings and turnings were selling at \$9 to \$9.50, while No. 1 cast, No. 1

were closed down at various times during 1902 is also of some weight. The jobbing element, which proved a source of annoyance to some of the mills during 1902, also is a factor which is being taken into serious consideration, and by some of the independent mills at least, if not by the dominating interest, a change of policy will be inaugurated in 1903. This refers more especially to bar iron, however, which is becoming of less and less importance through the constantly increasing consumption of steel, the latter being pushed at the expense of iron.

It seems to be recognized by both producers and consumers of bars that there is a definite level of prices upon which consumption of bars will be stimulated, and to discover this point from the tangled scale of prices from the record for the last decade is the subject to which more than ordinary attention is being given.

It is of some significance that Chicago jobbers have covered requirements for steel bars quite liberally since January 1, anticipating an advance in prices, while, on the other hand, small consumers persist in the belief that lower prices will result from existing conditions. The opinion prevails in some quarters that the establishment of official prices on bars will be made this year earlier even than last year, but the basis for this belief is little better than rumor.

## The Ore Dust Suit at Pittsburgh.

In a local court at Pittsburgh, on Monday, January 12, an opinion was handed down dismissing the suit against the Jones & Laughlin Steel Company, known as one of the ore dust nuisance cases. The court says that the dust complained of comes from the use of Mesaba ores. Unless some means is discovered to prevent "slips" in furnaces the annoyance to adjacent property owners is likely to continue. In determining the ques-

Bar Steel and Iron Prices from 1892 to 1902.—Mill Shipment, Chicago.

Prices Current on the First of Each Month.

	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.	
	St.	Iron.	St.	Iron.	St.	Iron.	St.	Iron.	St.	Iron.	St.	Iron.	St.	Iron.	St.	Iron.	St.	Iron.	St.	Iron.	St.	Iron.	St.	Iron.
	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.
1892...	1.75	1.65	1.77½	1.67½	1.75	1.65	1.80	1.60	1.75	1.58	1.70	1.55	1.70	1.60	1.80	1.70	1.85	1.63	1.80	1.65	1.80	1.65	1.70	1.60
1893...	1.70	1.60	1.65	1.55	1.65	1.60	1.65	1.55	1.63	1.50	1.60	1.45	1.65	1.45	1.65	1.42½	1.60	1.45	1.55	1.42½	1.52½	1.40	1.40	1.35
1894...	1.30	1.30	1.35	1.25	1.30	1.15	1.20	1.05	1.20	1.00	1.35	1.05	1.30	1.05	1.30	1.10	1.25	1.05	1.25	1.00	1.20	1.02½	1.20	1.05
1895...	1.20	1.05	1.15	1.00	1.15	1.00	1.15	1.00	1.20	1.10	1.25	1.15	1.40	1.30	1.55	1.40	1.60	1.50	1.65	1.50	1.57½	1.50	1.45	1.50
1896...	1.40	1.30	1.45	1.35	1.35	1.35	1.35	1.20	1.30	1.30	1.30	1.30	1.30	1.25	1.30	1.25	1.30	1.20	1.30	1.20	1.30	1.20	1.15	1.30
1897...	1.17½	1.25	1.20	1.25	1.15	1.15	1.10	1.10	1.05	1.10	1.05	1.00	1.00	1.00	1.05	1.15	1.15	1.05	1.25	1.15	1.20	1.10	1.15	1.10
1898...	1.12½	1.05	1.15	1.05	1.15	1.05	1.10	1.05	1.05	1.05	1.05	1.05	1.05	1.00	1.07½	1.05	1.15	1.10	1.15	1.05	1.10	1.05	1.10	1.02½
1899...	1.10	1.10	1.15	1.15	1.30	1.30	1.60	1.55	1.60	1.60	1.85	1.70	2.00	1.85	2.05	1.85	2.25	2.15	2.30	2.30	2.45	2.30	2.35	2.30
1900...	2.30	2.30	2.35	2.30	2.35	2.30	2.35	2.30	2.10	2.07	2.10	1.90	1.50	1.60	1.30	1.40	1.30	1.35	1.30	1.35	1.30	1.30	1.35	1.45
1901...	1.40	1.45	1.40	1.45	1.55	1.55	1.65	1.60	1.65	1.60	1.55	1.55	1.55	1.65	1.60	1.60	1.65	1.70	1.65	1.65	1.65	1.70	1.65	1.65
1902...	1.65	1.65	1.65	1.75	1.75	1.85	1.75	1.85	1.75	1.90	1.75	1.75	1.75	1.75	1.80	1.75	1.80	1.75	1.85	1.75	1.75	1.75	1.75	1.75

busheling and axle turnings had risen above \$14, and machine shop turnings were bringing \$12 to \$13 per ton. From this it will be observed that the general level of the scrap market during the high point of 1900 for bars was nearly on a level with the present prices for old material, while the prices for bars were considerably higher than present bar prices. But, as has already been pointed out in detail, peculiar conditions prevailed during 1902, for months the bar situation being the least satisfactory of all finished products.

In 1902 the policy pursued in establishing prices for bars precipitated the heaviest buying movement in March instead of June, as had previously been the case, the advance in prices taking place on April 1 as far as the heaviest consumers were concerned. Small buyers, however, were obliged to pay an advance during March. There is a contention among the largest consuming interests that there should be greater distinction among the various classes of purchasers, depending upon the quantity of material consumed, and by some producers this view is being entertained. The fact, too, that the largest agricultural implement manufacturers will soon be in a position to manufacture all, or nearly all, of the bars which they will consume may have an important bearing on the establishment of official prices. The fact that many mills, both iron and steel producers,

tion of relief to the plaintiffs the court says that it must be remembered that they are in a manufacturing city and close to a location that has been used for mills for a half century; it must also be considered whether granting the injunction would not do more injury than refusing it.

A number of decisions quoted determine that the courts will not enjoin a useful industry conducted in a careful manner on an appropriate site. In the case at issue all these points are fully met. On the question of injury that would follow granting an injunction the court says if it is unlawful to use Mesaba ores in this furnace it is unlawful to use them in any furnace in the county. An injunction, therefore, would affect each of the 37 furnaces in Allegheny County, which, with their allied interests, have a capital of \$400,000,000 and employ 60,000 persons. The damage to the county and its people would be inestimable. The injunction is refused, the court continues, because it appears that the defendant's business is lawful and is carried on in a proper manner on an appropriate site; because greater injury would be done by granting than by refusing the injunction, and because the plaintiffs have an adequate remedy at law.

It was announced on behalf of the plaintiffs that an appeal would be taken.

## Iron Production and Consumption in Scotland.

GLASGOW, January 9, 1903.—The returns of the Scottish Ironmasters' Association of the production, consumption, exports and stocks of Scotch pig iron have just been issued. They show an output of 1,293,074 tons, or an increase of 181,084 tons on 1901. The shipments to foreign ports were 208,644 tons, as compared with 118,909 tons in 1901, an increase of 90,554 tons, which, however, will include some few thousand tons of Cumberland and Cleveland iron sent here for transshipment to America. The total shipments, foreign and coastwise, were 386,758 tons, as compared with 277,447 tons in 1901, an increase of 109,311 tons. The total deliveries for home consumption and export were 1,342,977 tons, as against 1,113,379 tons. This being an increase of 48,514 tons more than the increase in the output, the difference had to be drawn from stocks, which on December 31 were reduced to 24,035 tons in the warrant stores and 63,319 tons in makers' yards. The stock in makers' hands was much smaller a week earlier, having accumulated during the last two or three days of the year, as local consumers stopped taking deliveries when preparing to shut down for the New Year holidays.

The output of Cumberland pig iron in 1902 was 1,382,100 tons, an increase of 74,400 tons on 1901. The foreign shipments from Cumberland were 76,426 tons, an increase of 19,952 tons. The coastwise shipments are returned as 342,487 tons, an increase of 58,995 tons, but these coastwise shipments included parcels sent to Liverpool and Glasgow for transshipment at these ports to America. The deliveries for local consumption were 970,538 tons, a decrease of 4518 tons. The total stocks in makers' hands and in warrant stores at the end of the year were 46,617 tons, a decrease of 7351 tons. If to this decrease in the stocks be added the increase in the make, 72,400 tons, there is a total of 79,751 tons, and if from this be deducted 5322 tons, being the decrease in stocks in 1901, the net increase in consumption is shown to have been 74,429 tons on the year.

### The Warrant Market.

At the beginning of 1902 the cash price of Scotch pig iron warrants was about 49 shillings. The lowest point touched during the past 12 months was 48 shillings 10 pence on January 6, and the highest 58 shillings 4 pence on September 22. At the close of the market in 1902 the price was 53 shillings 10½ pence. In the following statement the highest and lowest prices touched during the past 15 years are shown, as well as the quantity of iron in warrant stores at the end of each year. The greatest quantity of iron in these stores was 1,244,433 tons, in 1888, and the smallest quantity 17,062 tons, in October, 1874.

#### Scotch Warrant Iron.

	Highest. s. d.	Lowest. s. d.	Warrant stock. Tons.
1902.....	58 4	48 10	24,035
1901.....	58 6	48 9	58,300
1900.....	77 10½	59 8	71,300
1899.....	75 7	49 7	245,258
1898.....	50 5	55 2½	316,507
1897.....	48 11	43 2	337,480
1896.....	49 3	44 9½	363,072
1895.....	49 1	41 0½	346,003
1894.....	44 2½	41 3	287,886
1893.....	51 0	40 2½	381,790
1892.....	47 0	40 0	443,646
1891.....	59 0	42 1½	579,677
1890.....	68 3	43 4	613,445
1889.....	64 10½	40 10	1,035,840
1888.....	43 6	37 1	1,244,433

Cleveland warrants at the beginning of 1902 were 43 shillings 3½ pence cash. This was the lowest reached during the year, while the highest was 53 shillings 11 pence on September 22. At the close of the market last year the quotation was 46 shillings 10½ pence. The following table gives the highest and lowest prices for the past 15 years, as well as the quantity of Cleveland iron in warrant stores at Middlesbrough at the end of each year:

#### Cleveland Warrant Iron.

	Highest. s. d.	Lowest. s. d.	Warrant stock. Tons.
1902.....	53 11	43 3½	117,356
1901.....	50 0	42 7	140,500
1900.....	78 3	50 0	57,200
1899.....	75 6	49 7	71,123
1898.....	52 0	39 10	145,390
1897.....	44 0	38 0½	85,671
1896.....	41 1½	36 1½	178,000
1895.....	39 11½	34 0	193,000
1894.....	36 9	34 9	103,000
1893.....	36 4	33 7	101,000
1892.....	41 7	34 9	27,000
1891.....	43 3	37 7	154,000
1890.....	66 1½	39 6	116,000
1889.....	68 0	33 6	183,000
1888.....	35 1	30 11	255,000

For Cumberland hematite warrants the lowest cash price during the year was touched early in January—viz., 55 shillings 8 pence, while the highest was 61 shillings 10½ pence on September 18. The price at the end of 1902 was about 58 shillings 7½ pence. Annexed are the details:

#### Cumberland Warrant Iron.

	Highest. s. d.	Lowest. s. d.	Warrant stock. Tons.
1902.....	61 10½	55 8	24,333
1901.....	63 0	55 4½	54,000
1900.....	86 10	63 10	59,300
1899.....	80 1½	57 3½	237,000
1898.....	59 4½	48 2	241,500
1897.....	51 9	46 4	185,000
1896.....	51 3	45 9	375,660
1895.....	51 6	42 2½	404,700
1894.....	46 1	42 9	275,000
1893.....	46 6	44 4	210,300
1892.....	53 0	44 9	88,500
1891.....	54 3	46 6	191,500
1890.....	82 0	49 4	257,500
1889.....	78 4	44 0	447,500
1888.....	46 0	40 7	562,000

The makers of the Cleveland district (which includes Durham) do not now issue any statistics, to the market at any rate, of their output and stocks. But judging by the known output of the first six months the production of 1902 cannot have been much less than 3,000,000 tons, seeing that there were 82 furnaces in blast at December 31, as compared with 79 at the end of 1901. This, of course, includes ordinary Cleveland, hematite and basic iron. Makers' stocks are unknown but comparatively small. The stock in public stores was reduced during the year from 121,657 tons to 140,467 tons, a decrease of 18,810 tons. The shipments, foreign and coastwise, from Middlesbrough, increased from 1,061,870 tons to 1,142,786 tons. The quantity of Cleveland iron sent to Scotland in 1902 was 504,000 tons, as against 450,000 tons in 1901, an increase of 48,000 tons.

This Cleveland iron was, for the most part, consumed in Scotland, as well as the quantity of Scotch iron above shown. There were in addition imports of Cumberland iron to the extent of 126,500 tons, and numerous parcels of Canadian and Russian iron. Summing up these altogether we have the following:

#### Consumption of Pig Iron in Scotland.

	1902. Tons.	1901. Tons.
Scotch iron.....	950,219	835,932
Cleveland iron.....	504,000	456,000
Cumberland iron.....	126,500	114,000
Canadian iron.....	46,000	53,000
Russian iron.....	10,000	.....
Totals.....	1,642,719	1,458,932

There was thus an increase of 183,787 tons in the consumption of all iron in Scotland, as well as an increase of 109,311 tons in the shipments of iron from Scotland.

#### Influences Governing the Iron Market.

The finished iron and steel works have been closed while the warrant market was waiting the publication of the annual statistics. The chief demand from America for Scotch and Cleveland irons began early in the spring of last year, while by the summer months shipments from all parts of the United Kingdom were regular and of large extent. During the autumn the demand became still more urgent, with the result that an enormous quantity of iron has been shipped. Exports of



pig iron from Europe to America, which for years past had been practically *nil*, have within the past 12 months exceeded the quantities shipped when the United States was to a large extent dependent on foreign iron. Production and consumption in America have of late so enormously increased that the year's export from Great Britain, 504,252 tons, seems comparatively insignificant. Nevertheless, that quantity of iron has been taken from this country by America, and this has more than compensated for the collapse of the German demand for Cleveland iron. Owing to the gloomy outlook at the beginning of 1902 very considerable overselling of pig iron occurred on the warrant market, but prices soon had a very sharp advance. The oversold position was only recently squared off, with the result that the speculative market is now in a freer condition; at the same time the stocks, not only in public stores but in makers' yards, are at the lowest point on record. There is every likelihood of considerable shipments of iron being made from this country to America for the first three months of the new year, while sales have also been made as far forward as for August shipment.

Apart from the American demand consumption in Scotland has been large, as above shown in comparison with 1901. In the case of hematite the local demand of late has been urgent. While steel producers received last year many orders from America for manufactured and semimanufactured steel, they were somewhat handicapped by the accompanying demand for pig iron. The price of Scotch hematite, however, has only fluctuated between 59 shillings 6 pence and 62 shillings 6 pence per ton, and the present price is 61 shillings. Makers of pig iron generally have had a very good year, for apart from the satisfactory prices obtained for their iron they have done remarkably well in the matter of by-products, such as sulphate of ammonia, pitch, tar, &c. The high price of fuel has, however, to a certain extent curtailed profits.

There is a project on foot for a combine of the makers (in Scotland) of what we call malleable iron. I shall refer again to this matter when it matures, but meanwhile the trade is not booming.

The business done in the malleable iron works in 1902 was only a moderate one. While there was not any great pressure of work, there was for the greater part of the year a steady supply of orders, both for the home and foreign markets, but the scarcity of fresh business has been keenly felt within the last two months or so. Largely on account of the rise in the price of pig iron during the year the prices of manufactured iron had also to be advanced, and this tended in the latter months of the year to prevent buyers from entering into fresh engagements. The strong demand for pig iron from America which arose during last year benefited the Scotch pig iron makers, but, along with the keen competition in finished iron and steel from Belgium and Germany, seriously affected the trade and profits of the Scotch manufacturers of iron and steel.

A notable increase in the demand for iron and steel for South Africa has been experienced since the close of the war, and it is expected that a further development will shortly take place in that market. Other colonies also have increasing needs, and our local manufacturers are fully alive to the necessity of being in the position to meet these demands. No change has taken place in the standard rate of wages in the manufactured iron trade during the past year, and no serious trouble has arisen at any of the works. This is due, to some extent, to the influences of the Conciliation and Arbitration Board, and employers and workmen alike are reaping the benefits of a reign of peace.

#### Shipbuilding.

In 1902 the total amount of new shipping put into the water from Clyde yards reached 518,270 tons, as against 511,990 tons in 1901. As to the work on hand, it is estimated that the amount to commence the new year with does not exceed 340,000 tons, whereas a year ago the total was about 400,000 tons. The falling off of work on hand at the shipyards is practically confined to one class of vessels—viz., the general cargo or "tramp" boat. For some time rates of freight have been at a

level which makes it extremely difficult for owners of boats to keep their tonnage running without incurring a loss; many owners have, in fact, been losing money.

#### The Steel Trade.

The adverse course of affairs in the shipping trade has been reflected on the steel trade. At the beginning of 1902 shipbuilding material was fairly steady in price, but owing to the scarcity of new orders for vessels of the ordinary class prices receded, and for a time producers received practically no compensation in reduced costs of raw material. At the end of 1901 steel ship plates in Glasgow were £5 17s. 6d. per ton, less 5 per cent. The price receded in February, 1902, to £5 12s. 6d., but recovered to £5 17s. 6d., at which they are (nominally) still quoted. In December, 1900, plates were £7 5s., but in January, 1901, they were down to £7, in February to £6 15s., in March to £6 5s., in April to £6, and in May, 1901, to £5 17s. 6d. Steel angles at the end of 1901 were £5 10s. per ton, less 5 per cent. Early in 1902 they gave way to £5 7s. 6d. but afterward recovered to £5 12s. 6d. During the past month or so, however, they have come back to £5 10s. Steel boiler (marine) plates were £7 15s. per ton, less 5 per cent., at end of 1901. In February, 1902, they were reduced to £7 10s., at which price they nominally remain. Malleable iron, ordinary bars, which were £6 15s. per ton on August 7, 1901, were reduced on January 27, 1902, to £6 10s. On February 28 they were raised to £6 15s., and on August 12 to £7, but on September 27 they fell again to £6 15s., at which price they are still nominally quoted.

#### A Large Japanese Locomotive Order.

Thirty-two more locomotives, weighing 49 tons, to be of the Belpaire type (including two compound engines), are required for Japan, and the tenders sent in are from seven firms, including three Glasgow makers, Dubs & Co., Neilson, Reid & Co., and Sharp, Stewart & Co. The only other British company invited to submit tenders was Beyer, Peacock & Co. Three German firms were also invited, but no American firm was included in the list. This is a result of the consideration of the tenders submitted for the 30 locomotives three months ago, when Dubs & Co. of Glasgow secured the order. The price which they are getting for their 30 locomotives is £2075 per engine, delivered in Japan. The 32 new locomotives are to be delivered before the end of May. n. t.

**Sweeping Injunction Against Strikers.**—The United States District Court at Baltimore has signed an order granting to Isaac A. Sheppard & Co., stove manufacturers, of Philadelphia, a temporary injunction against a number of iron molders who have been on a strike since November 13 last. The order prohibits the men from hindering the firm or their employees in the discharge of their business, from gathering near the plant for the purpose of interfering with their workmen, from following the workmen or going to their abiding places, from harassing them in any way or using abusive or threatening language toward them, from going to other shops and interfering with the use of the product of the firm, from placing pickets or patrolling the streets near this shop, from intimidating persons not to work for the firm. This order applies not only to the defendants named in the suit, but to all other persons as soon as they shall have knowledge of the order.

**The New Hirsch Works at Cincinnati.**—The Cal. Hirsch & Sons Iron & Rail Company, St. Louis, Mo., have secured 6 acres of ground at Ivorydale, a suburb of Cincinnati, Ohio, where they will erect large works and shops for making iron and steel railway specialties. The site is located on the Big Four railroad tracks and adjoins the tract now occupied by the Laidlaw, Dunn & Gordon branch of the International Steam Pump Company. The Hirsch Company also expect to have at their new plant one of the largest scrap iron yards in the country. The future plans of the company contemplate the erection of a steel plant and rolling mill for the manufacture of their specialties.



### An Electrically Operated Oil Circuit Breaker for High Tension Circuits.

The rapid increase during recent years in the size of central stations and the currents and voltages handled therein has necessitated a great development in the methods and apparatus for controlling and switching electric currents. While a few years ago most alternating current switchboards were equipped with hand operated knife switches, it is now found advisable and often necessary to use some means of auxiliary control. This permits the actual current switching devices to be located with regard to the general design of the station and a satisfactory lay out of circuits and apparatus; at the same time it centralizes the control within a small space where the operator may have under his hand, so to speak, the whole station, and before his eye an indication of the condition of every circuit.

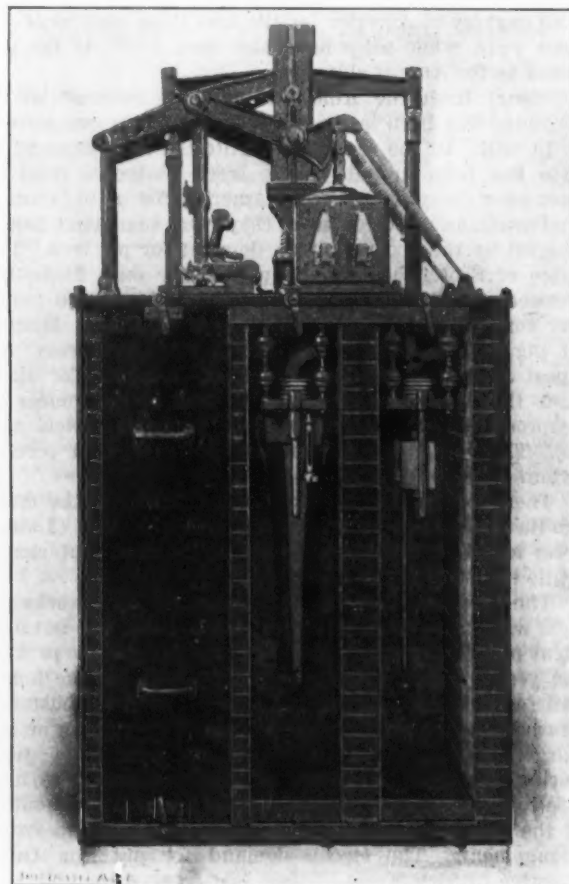
One of the most remarkable pieces of apparatus which has contributed to make this great development possible is the high tension, power operated, oil break circuit breaker. While the carbon shunt open air type of breaker, in which the arc is ruptured in the open air, has given excellent service in most classes of work, there are many places where, on account of space or other limitations, its use would not be feasible. It is to meet the need of a compact, safe and reliable device for rupturing high tension circuits that the oil break circuit breaker has been developed. The accompanying illustration shows a three-pole, double break, automatic oil circuit breaker, operated by electro magnets. The circuit breaker is erected in a masonry structure with each pole and oil tank in a separate, fire proof compartment. There are two stationary contacts to the pole, one connected to the incoming lead and the other to the outgoing lead of the same phase, each contact being mounted in a large porcelain insulator. In the illustration one of the porcelain insulators is visible in the right hand compartment.

The insulators are fastened to a cast iron frame, which also supports the inclosing oil tank. The frame itself is supported from the soapstone slab at the top of the masonry walls by strain insulators. The movable contact for each pole consists of a U-shaped piece of copper fastened to the end of a stout wooden rod. In the closed position of the switch one of these U-shaped pieces electrically connects the two stationary contacts of each pole. The wooden rods are fastened at their upper ends to a common cross bar, which extends over the three masonry compartments and is supported by a system of levers giving a straight line up and down motion. The cross bar is raised by the inclosing magnets, assisted at the beginning of the motion by a pair of balancing springs. The springs and the case containing the magnet are at the upper right hand corner in the illustration. A toggle joint, shown at the left in the illustration, automatically locks this system of levers when the circuit breaker is in the closed position.

The toggle joint is released by a blow from the tripping magnet, whereupon the cross bar under the influence of gravity and a powerful spring quickly drops, opening the contacts. The break takes place first at the main contacts and then afterward at a removable plug attached to the stationary contact which enters a hole on the movable contact. The plug thus receives all the effects of any arcing that there may be, and, since it is removable, is easily replaced. The current for the closing and tripping magnets is derived from the excitors, storage battery, or other source of low voltage direct current supply. If necessary the circuit breaker can easily be operated by hand without disturbing the mechanism in any way. The oil tanks, one of which is to be seen in the middle compartment, are constructed of heavy sheet metal and the interior is lined with insulating cement, which is molded to fit closely about the terminals and moving contact piece, leaving just room enough for the free movement of the parts in oil. By this means the amount of oil is reduced to a minimum. When the circuit breaker is open the wooden rod interposes an effective barrier between the two terminals of each pole. Suitable levers are

provided for handling the tanks, which may be lowered away from the contacts and removed without disturbing the rest of the circuit breaker. The entire circuit breaker may be set in place and all parts adjusted before the oil tanks are placed in position. When necessary the tanks may be filled without removing them from their position. The oil level is easily seen by means of a small sight gauge. The tanks are insulated from the circuit, and, all the live metal parts being immersed in oil, there is no possibility of receiving a shock from touching the breaker.

Mounted on each circuit breaker is a small double pole, double throw knife switch, which is used with the indicating and tripping circuits and is operated by the motion of the levers of the circuit breaker. The controlling and indicating devices consist of a controlling switch, an electro-mechanical tell-tale indicator and a lamp. These are suitably mounted at the operating plat-



AN ELECTRICALLY OPERATED OIL CIRCUIT BREAKER FOR HIGH TENSION CIRCUITS.

form. A polyphase overload relay, connected to series transformers in the main circuits, is provided for automatic opening. The controlling switch, which is of the drum type, has three positions—namely, "closed," "off" and "open." It will remain of itself in the "off" or the "open" positions only. In other words, if it is thrown to the "open" position it will remain in that position when the hand is removed, but if it is thrown to the "closed" position it will turn of itself to the "off" position as soon as the handle is free. In the "off" position it connects the control circuit so that if the oil circuit breaker opens through the action of any of the automatic devices the lamp will be lighted on the operating stand to attract the operator's attention. If the oil circuit breaker is opened by the operator throwing the controlling switch to the "open" position the lamp does not light.

The mechanism of the electro-mechanical tell-tale indicator consists of an electro-magnet which attracts a pivoted armature through an angle of about 90 degrees. Attached to the armature is a disk with a pointer which indicates to the eye the "open" or "closed" position of the oil circuit breaker.

In the accompanying illustration the closing magnet

is partly hidden by the overload relay. This operates on the principle of the single phase induction motor. Each of the sectors swings between the poles of an alternating current electro-magnet. Part of each pole is surrounded by a short circuited strip of copper, which acts to retard the magnetic flux and thus produce a shifting field. This tends to move the counterweighted sectors which carry a contact closing the tripping circuit of the circuit breaker. The two sectors are connected in parallel and either alone will trip the breaker. The currents for their magnets are derived from the phases of the main circuit by series transformers.

The apparatus described above, known as the "Type C circuit breaker," is manufactured by the Westinghouse Electric & Mfg. Company.

### The George A. Hogg Iron & Steel Foundry Company.

The George A. Hogg Iron & Steel Foundry Company of Pittsburgh, Pa., manufacturers of engines and rolling mill machinery, are considering the advisability of abandoning their machine shop and foundry in that city and building an entirely new plant outside of Pittsburgh, but within a few miles of the city. Several locations have been offered them, but as yet nothing has been done toward securing a new site. For some years the company have been handicapped for the reason that the capacity of the present plant was limited and, as they have not enough ground where they are now located to enable them to enlarge their plant as much as they would like, they must either find a new location or continue to operate a plant of limited output. The company have been operating their shops almost continuously night and day for the last 10 or 12 years and have been compelled to decline at least two or three times as much work as they turned out, owing to the fact that the output of their plant was limited and they could not make satisfactory deliveries on more work.

The works were founded in 1855 and incorporated as a stock company in 1889. The company have made a large amount of money, but not nearly as much as they would have made had the plant been of sufficient capacity to have enabled them to take all the work that was offered. Should the company decide to build a new works, their plan would be to increase the capital stock to \$500,000; then dispose of enough stock to outside parties to permit them, with the capital now interested, to build a strictly modern plant of large capacity and afford ample working capital. A plant in which the largest machinery is likely to be wanted could be easily and economically handled and manufactured.

The idea is to first secure, where cheap fuel can be had, on at least two railroads, a suitable piece of ground large enough to enable them to build such a plant as they now wish with room for extension as needed. They will then erect a machine shop building and erecting room (main building, 400 feet long, 60 feet wide and 50 feet high to the chords), with a leanto on both sides 30 feet wide and 30 feet high to the chords. Both the leantos and main building will be equipped with electric traveling cranes. All of the machine tools will be so arranged that all work can be placed in or upon any of the machines by the electric cranes and removed when work is finished. Sixty feet of the leanto on one side of the machine shop building will be used for engine room. In this will be placed the machine shop engines, dynamos for the electric power and light plant and the engines for driving these; also the compressed air plant. The next 50 feet of this leanto will be used for a tool room and the next 60 feet for a blacksmith shop. The balance of this leanto, as well as the leanto on the other side of the machine shop building and also the main building, will be used for machine tools and for erecting the rolling mill work.

The foundry building will be the same as the machine shop. It will also be equipped with electric traveling cranes. In the leanto on one side of the foundry building will be placed three cupolas and four air furnaces. Part of the leanto on the other side of the foundry building will be used for the core ovens and core mak-

ers. Small castings will be made in the balance of the leanto. All the rolls and heavy castings will be made in the main foundry building. There will be a boiler house 60 by 60 and 30 feet high, in which will be placed the boilers, steam pumps and heaters. There will also be a building in which the patterns will be made and stored. This building will be 200 feet long and 60 feet wide and will be three stories high.

All buildings will be built of brick with steel frames inside and all roofs will be of slate. The floor of the machine shop and boiler house will be of brick; therefore, the buildings will be practically fire proof. There will be a railroad switch along one side of the foundry as well as a switch through the machine shop and foundry; also in front of the machine shop, foundry and boiler house, so that all fuel can be unloaded in front of the boilers, furnaces, cupolas, &c., ready for use. There will be two electric cranes in the yard, one of which will be used to unload all the pig iron, scrap, &c., for use in the foundry. The other crane will be used to handle the flasks, chills, &c., that are stored in the yard. If the company decide to build their new plant, work will be commenced upon it early in the spring. The general offices will probably be in Pittsburgh. Only such of the machinery that is up to date will be moved from the present plant.

### International Customs Congress.

Representatives of the United States and the Latin-American republics, delegates to the International Customs Congress, are now holding a meeting in New York City, which is expected to continue for a week. By the terms of the resolution under which the congress is being held the delegates are to abstain from all recommendations which would directly or indirectly counsel the republics to alter either the custom house duties of the various countries, or the basis established by tariff laws for their collection. The question of reciprocity is not scheduled for discussion.

The conference appointed four committees, in whose charge will fall the principal work of the meeting. The Committee on Vessels will consider the requirements of a ship and requirements incident to the entry and clearance of a vessel at foreign ports. The Committee on Merchandise will consider the conditions under which merchandise from a foreign country may be brought within the jurisdiction of the collector of customs. The Committee on Nomenclature will consider the basis of a common nomenclature to be adopted in the official documents, such as manifestos, invoices, &c., required in trade among the Pan-American republics. The Committee on Future Congresses will consider the organization of a permanent customs commission. The delegates attending the congress are as follows:

United States Collector N. N. Stranahan, Appraiser George W. Whitehead, Special Deputy Collector Joseph J. Crouch, President Israel Fischer of the Board of United States General Appraisers, ex-Mayor William R. Grace, Shipping Commissioner E. T. Chamberlain, Assistant Secretary of the United States Treasury O. L. Spalding, W. H. Lincoln, president of the Boston Chamber of Commerce; Gustav S. Schwab, Kenneth Barnhart and Robert B. Armstrong of the firm of Marshall Field & Co., Chicago.

Bolivia, Sr. Don Jorge E. Zalles, first secretary and chargé d'affaires; Costa Rica, Sr. Don Joaquín Fernando Calvo, E. E. and M. P.; Cuba, Sr. Don Fidel G. Pierra; Ecuador, Sr. Don A. Baquerizo, E. E. and M. P.; Guatemala, Sr. Don Joaquín Yela, Sr. Don Joaquín Yela, Jr., Sr. Don Julio Yela, Sr. Don Santiago Smithers, Don Felipe Canton, Sr. Don James Davis and Sr. Don Juan J. Ulloa; Honduras, Sr. Don M. Bolet Peraza; Mexico, Sr. Don J. Arrangoliz and P. M. del Paso; Nicaragua, Sr. Don Luis F. Cores, E. E. and M. P., and Sr. Don A. D. Straus, consul in New York.

It is estimated that improvements now actually under way by the railroads of the country aggregate nearly \$400,000,000, including new mileage being built.



## New England Foundrymen's Association.

The annual meeting of the New England Foundrymen's Association was held on January 14, at the Hotel Essex, Boston. About 60 members were present. The following officers were re-elected: Henry A. Carpenter, A. Carpenter & Sons Foundry Company, president; B. M. Shaw, Walker-Pratt Mfg. Company, vice-president; Fred. F. Stockwell, Barbour-Stockwell Company, secretary; George H. Lincoln, George H. Lincoln & Co., treasurer. The members of the Executive Committee for 1903 are John Magee, Magee Furnace Company; Theodore Colvin, Colvin Foundry Company; William Doherty, Doherty Bros.; James F. Lanigan, Davis Foundry Company; W. H. Bense, Kinsley Iron & Machine Company.

Important changes were adopted in articles II and III of the constitution. Article II, in regard to the object of the association, now reads: "The objects of this association shall be the advancement of the interests of foundry operators and all others engaged in trades allied to the foundry business; to promote the mechanical and industrial interests; to collect for the use of the association all proper information connected with the foundry business and its allied interests, and to promote harmony and encourage uniform customs and actions among its members." Article III, as amended, reads: "Any person, firm or corporation engaged in the brass, iron or steel business or allied trades is eligible to membership." These changes are important in that they permit all persons allied to the foundry business to become members of the association.

The following were elected to membership: Rufus K. Jordan, Westbrook, Maine; Becker-Brainard Milling Machine Company, Hyde Park, Mass.; D. F. Egan, Lynn, Mass.; O. G. Thomas, Taunton, Mass.; B. F. Sturtevant Company, Jamaica Plain, Mass.

Dinner was served at 6 o'clock, after which William J. Keep, superintendent of the Michigan Stove Works, Detroit, and an eminent authority on foundry practice, addressed the association on

### Cupola Mixtures, Regulating Quality by Chemical Analysis and by Mechanical Analysis.

[The following is an abstract of the paper, it being the intention to publish the full text as a handbook for founders.]

The object of this paper is to give the founder an idea of the best chemical compositions of pig irons and of castings for various purposes and the desirable physical qualities. It presents methods by which a founder may use chemical analysis for calculating the composition of iron mixtures, and gives various facts which will help him to improve his practice, and finally it tells how to use mechanical analysis in conjunction with chemical analysis, or by itself, for controlling the quality of castings. Specifications for pig iron, coke and castings were given in four tables.

Then followed some points regarding the use of decimals, to enable any one to calculate the chemical composition of a foundry mixture. The methods for making such calculations were illustrated by six examples. The author endeavored to make the explanations so intelligible that any founder could make use of analyses of pig irons in making up cupola mixtures.

The paper contained eight tables of chemical analyses of pig irons and of castings made from them. A comparison of these actual analyses with the analysis sent with each car of iron showed the latter to be reliable, there being no more difference than would be expected when two analyses were made from different samplings of any car of iron.

The best method of weighing cupola charges was discussed, whether it is better to weigh each kind of iron separately, or to place on the scale a given number of pigs of each brand of iron, beginning with the iron containing the greatest percentage of silicon and balancing the scale with the iron containing the least percentage. The author prefers the latter, and found by weighing each charge of iron by both methods that the calculated percentage of elements did not vary enough to make

any difference. If the latter method is adopted, it is recommended that the average weight of the pigs of each brand of pig iron be used, as there is considerable variation in the size of pigs from different furnaces. Using such average weights in determining how many pigs of each to use in a charge, the correct weight of each iron is used.

From tables containing 80 different analyses the loss or gain of each element during remelting was found, with the following results stated:

Total carbon decreased; whether it was more or less graphite depended upon conditions.

Silicon always decreased, and the 0.20 per cent. which chemists usually add to make up such loss was not enough; 0.25 would be more safe.

Phosphorus varies slightly either way, according to conditions.

Sulphur always increases and chemists usually consider it 0.03 per cent.

Manganese always decreases.

In the absence of reliable data regarding the loss of iron during remelting some very interesting experiments were made. In a cupola lined to 52 inches, with coke containing 0.72 per cent. of sulphur, and having a wind pressure of 12 ounces, 1 ton of No. 1 pig iron was melted with a loss of 95 pounds, or 4.75 per cent.

By pickling a ton of pig iron it was found that 33 pounds of the loss was sand.

A ton of cleaned stove plate lost 159 pounds, or 7.95 per cent.

A ton of cleaned sprues lost 130 pounds, or 6.50 per cent.

A ton of stove plate not cleaned lost 230 pounds, or 11.50 per cent.

A ton of sprues not cleaned lost 280 pounds, or 14 per cent.

In a regular heat, with the cupola filled to the charging door, the average of two cupolas, melting 20 tons each, showed a loss of 88 pounds per ton, or 4.41 per cent.

The calculated loss, using the experimental data just given, was 5.80 per cent., showing the advantage of running with a cupola filled.

Another 10-ton heat in one cupola showed a loss of 4.47 per cent. This is probably the actual per cent. of loss under good conditions. The coke and cinder at the bottom were picked over very carefully and no iron was thrown away. The shot iron recovered from the gangway, with a sieve having a mesh of six to the inch, was 26 pounds to the ton. Good molding sand recovered from the gangway and thrown back on the heaps was 111 pounds for each ton of iron melted. The coke recovered from the bottom was 57 pounds for each ton of iron melted. For each ton of iron 43 pounds of limestone were used. There were 207 pounds of slag drawn from the slag hole for each ton of iron.

A ton of old stove plate scrap remelted lost 227 pounds, or 11.35 per cent., and by thoroughly cleaning another ton it was found that 50 pounds of the loss was rust.

For economical melting in cupolas larger than 48 inches inside nothing was gained by breaking pig iron, but no scrap should be charged larger than a pig of iron. No more dirt than is absolutely necessary should be put in a cupola and the cupola should be kept full to the door.

Tables giving the physical properties and the chemical composition of quite a large number of heats warranted conclusions regarding the influence of the elements on the physical quality, as follows:

Hardness and strength are not wholly dependent upon chemical compositions.

Shrinkage for any one size of test bar decreases as silicon increases.

Carbon lowers the melting point and shrinkage, and, when combined, hardens cast iron.

Graphitic carbon is deposited between the crystals of iron after they are formed, and the decreased strength of such iron is on account of the loose grain.

Silicon added to white iron turns it gray, by changing combined carbon into graphite. As silicon is the only element which it is practicable for the founder to use for



this purpose, and to decrease shrinkage, it is the controlling element.

Phosphorus does not influence carbon, but reduces strength more than any other element.

Sulphur is always present, but is of no benefit. It is sometimes freely absorbed by melted iron, and at other times, when the conditions seem the same, it is not. Some very interesting cases of sulphur absorption were cited.

Manganese hardens castings. Sometimes it combines with sulphur and enters the slag, but if manganese and sulphur both remain in the iron, the manganese does not counteract the influence of the sulphur. To find whether the silicon is exerting the influence that was expected the physical quality must be measured.

The shrinkage is the only physical quality that varies with anything like uniformity with the variations of silicon. The analysis of silicon, therefore, indicates what the shrinkage should be.

Turn this the other way: The measure of shrinkage shows the influence of silicon in the presence of all other elements and conditions.

The rest of the paper described mechanical analysis, the test bars, flasks and scale for measuring shrinkage. It is described as a quick, accurate and inexpensive method of regulating the quality of castings. It goes directly to the spot without any chance of a mistake. If the shrinkage continues uniform the quality is uniform. If the shrinkage increases silicon must be increased; if it decreases, silicon may be decreased by using irons lower in silicon. The apparatus is so made that it will produce absolutely accurate results in the hands of any one. The test bars cost 3 cents each day, and it takes 15 minutes to measure the shrinkage.

Mr. Keep is in favor of calculating the chemical composition of each mixture and of having an analysis of silicon and sulphur furnished with each car of iron, and an analysis of castings, but he advises the use of mechanical analysis, with or without chemical analysis. Its story is definite and does not require a knowledge of chemistry.

The next meeting of the association will be held at the Hotel Essex, Boston, on February 11. Dr. Richard Moldenke, secretary of the American Foundrymen's Association, will speak on the Valuation of Pig Iron for Foundry Purposes."

### The Mexican National Iron & Steel Company.

DURANGO, January 14, 1903.—The aggregate amount of foreign capital invested in various enterprises in Mexico is being continually augmented. The estimated total at any given time is apt to be altogether wide of the mark, but there is no doubt whatever in regard to its magnitude, and no gainsaying the fact that Mexican investments, whether in manufacturing, mining, agriculture or other line of activity, are especially attractive just now to foreign capitalists. Efforts in the direction of an increased production of iron and steel which are about to be made by the Mexican National Iron & Steel Company of Durango, a pioneer in this field, having the largest and most important plant in operation in the Republic, indicate that the company believe the investment of additional capital in the enlargement and improvement of the works to be amply justified by their past and present success and the encouraging outlook for the future.

Rumors have been afloat from time to time that the company intended to remove their plant bodily from Durango to Torreon, in the adjoining State of Coahuila. *The Iron Age* is in a position to say that the report is entirely erroneous. Not only have the company decided to remain in the advantageous position which they occupy in Durango, but they will at once carry out carefully considered plans for increasing their manufacturing facilities. As a matter of fact, the company have already begun the construction of a modern 100-ton blast furnace and two 18 x 85 foot fire brick stoves of the C. H. Foote type at their plant, situated 1 mile north of Durango, and at the foot of the celebrated iron mountain, of which they own 98 per cent.

The proposition to build the new furnace at Torreon and remove the entire plant there, consisting of rolling mill, machine shop, foundry, blacksmith, carpenter and pattern shops, was abandoned as a result of an expert investigation of the advantages of Torreon and Durango as producing points. It was decided to remain in Durango, for the reasons that Durango has an abundance of available cheap charcoal fuel, with rail communication, good water, temperate climate and the iron mountain, which makes it possible to produce iron there for about \$10 a ton less than at Torreon or any other railroad point in Mexico. Further reasons for rejecting the Torreon proposition were found in the reported difficulty of obtaining a satisfactory water supply and the unfavorable climatic conditions, the heat being too intense there for the greater part of the year for the workmen to stand before the furnaces. It was ascertained that iron and steel have never been successfully produced on a large scale below the twenty-sixth parallel of latitude, at such a low altitude, and the company decided that an attempt to manufacture those commodities in such a hot country would be experimental, problematical and hazardous, and they therefore decided to remain at Durango.

The company have secured two large and valuable oak and pine timber tracts, one crossed by the projected survey of the Mexican International Railway to the Pacific Coast; the other is on the Santiago branch of that line, which has been in operation for the past two years. Rails will be laid to the most available timber, where brick kilns will be constructed for the production of charcoal on a large scale, economically, to supply the new blast furnace when completed. The Swedish system of making iron and steel will be adopted throughout, and in the future the plant will be run entirely with charcoal and wood for fuel, and in that way the most superior quality of iron be produced at the minimum cost.

The abundance and availability of vegetable fuel in the district do away with the necessity of using coal and coke, which will always be scarce and expensive in Mexico, and of varying prices, conditions that would have had to be confronted at Torreon.

The company have recently added to their machine shop many new and costly tools imported from the United States, which give them the best equipped shop in Mexico for either jobbing or manufacturing purposes. Later they will be able to greatly increase their present production of pig iron, bar iron, mining machinery and castings, a necessity which has become imperative.

The building of the Mexican Central Railway from Gutierrez to Durango, and the extension of the Mexican International Railway from Durango to Guanacevi, and from Durango to the Pacific Coast, will make the latter city a railroad center and a competitive point. Durango is the nearest producing point for iron to the Pacific Ocean, being only 150 miles away. When the railroad is finished connecting Durango with ocean transportation it is the expectation of the Mexican National Iron & Steel Company to supply San Francisco and the entire Pacific Coast trade with pig iron, bar iron and steel.

J. J. D.

**The Jones & Laughlin Ore Roads.**—It has been authoritatively stated that the rights of way for the Jones & Laughlin railroads from Pittsburgh to the lakes have been secured and that bids on part of the work will be asked for early in the spring. It is the intention of the company to use the route of the old Pittsburgh & Eastern, a company organized some time ago to build a road along Street's run. This will give the Jones & Laughlin road a connection with the Union Railroad and the Monongahela Connecting Railway, and will also give the Wabash a connection with the proposed line for an entrance into the works of the Jones & Laughlin Steel Company. The plans of the new road include a bridge over the Ohio River, where the line will cross, and then a direct line to the lake at Cowles Creek, where the ore harbor will be located.

It is estimated that the production of pig iron in England was 8,076,000 tons in 1902.

### Abram S. Hewitt.

Abram S. Hewitt died at his residence in New York on Sunday, January 18, after an illness of ten days, aged nearly 81 years. Notwithstanding his advanced age, he had attended to business regularly until attacked by this illness. His faculties were not only unimpaired by his years, but his intellect seemed to brighten with advancing age, as shown by the vigor of his latest deliverances on public questions. He was a great man, being a leader of thought and action during his whole life. He was never actuated by sordid or selfish motives, but was always broad in his views and sincerely devoted to the advancement of his fellow creatures. He attained eminence as a publicist, a business man and a philanthropist, and his name will go down in history as one of the famous men of his time.

Abram Stevens Hewitt was born in Haverstraw, N. Y., on July 31, 1822. His father was an English machinist, who had come to this country as a representative of Boulton & Watt, the pioneer builders of steam engines, and had made a considerable fortune, but lost it. At the time Abram S. Hewitt was born the family lived in a log house on a farm. Young Hewitt attended the public schools in New York, and, as a result of a special examination, in which he stood at the head of his class, he won a scholarship at Columbia College. Here he acted as tutor at the time he was studying and severely overtaxed himself. At the time of his graduation his eyes were seriously impaired and the nervous temperament which he had inherited had been aggravated. This in no wise interfered with his capacity for work, however, and he at once started the study of law, at the same time continuing his teaching in college. During 1843 he was the acting professor of mathematics at Columbia, and two years later he was one of 23 out of a class of 57 who were admitted to the bar.

During his tutoring Mr. Hewitt had saved up some money—about \$1000—and with this he made a visit to Europe in company with Edward Cooper, his classmate, and afterward his brother-in-law. It was ten years later that Mr. Hewitt married his friend's sister, a daughter of Peter Cooper.

The shipwreck which came very near terminating the career of Abram S. Hewitt was part of this trip to Europe. The Alabama, a Mobile packet, on which Hewitt and Cooper were returning from the Mediterranean, was overtaken by a hurricane and sunk. The passengers and crew escaped in open boats. There were two of them, and the one to which the two friends had trusted their fortunes drifted away from the other. The other was picked up by a sailing vessel some hours later and by a miraculous chance this sailing vessel came across the other lifeboat later in the day. The party to which Hewitt and Cooper belonged had been drifting helplessly for 12 hours when they were thus discovered and saved.

After practicing law for a few years in this city, Mr. Hewitt found that his eyesight was not strong enough to permit him to continue in that profession, and he thereupon entered into a business partnership with his friend, Edward Cooper. Peter Cooper gave to the

young men the iron branch of his business, which needed pushing. The firm thus formed prospered greatly, and was one of the pioneers in the establishing of successful iron manufactures in this country. Cooper & Hewitt was the first firm to manufacture iron beams used in fire proof buildings and in bridges. In 1862 Mr. Hewitt went to England to learn the process of making gun barrel iron, and at a heavy loss to his firm he furnished the Government with material during the Civil War. Many of the improvements in methods in the manufacture of iron and steel in this country were introduced by him. In all his dealings with laboring men in his business he never had a clash or misunderstanding. His firm operated plants at Trenton, Ringwood, Pequest and Durham, N. J. In 1878 Mr. Hewitt publicly stated that for five years at that time the firm had kept its works running at an annual loss of \$100,000. During the depression 20 years later a similar policy was followed. The success which Mr. Hewitt met with in dealing with his workmen was notable, and lent to any opinions which he saw fit to give on labor ques-

tions a weight which was greater than that accompanying the remarks of many of his contemporaries and equals in business prosperity.

A public career was sooner or later the inevitable outgrowth of such a citizenship as Mr. Hewitt's. In 1867 he was one of the ten United States Commissioners appointed to visit the Paris Exposition in that year. The report on iron and steel, which he made at that time in co-operation with the late W. J. Slade, was the first comprehensive review of European iron manufacture published in the United States, and was a model of its kind. In 1874 Mr. Hewitt was elected to Congress on the Democratic ticket, and, with the exception of one term, served

continuously until 1886. While in Congress Mr. Hewitt was a great worker. He accomplished things. His views on financial matters, the tariff question and all the great questions of the day commanded the attention of the whole country. In 1886 he was nominated for Mayor of New York by the Democrats and elected, after one of the most spirited and peculiar campaigns in the history of the municipality.

Mr. Hewitt was a student always. He delved deeply into science as well as into economics, and he viewed with serious interest and keen inquiry each new idea and invention as it was given to the world. Every new thing that promised to improve the condition of mankind received from him cordial support. In 1876 he was chosen president of the American Institute of Mining Engineers, and his retiring address, on "A Century of Mining and Metallurgy in the United States," received widespread attention and favorable comment. In 1890, on the occasion of the visit to this country of the Iron and Steel Institute, he was again president of the Mining Engineers and delivered a thoughtful address. Mr. Hewitt was a friend of Sir Henry Bessemer, and he was one of the first to recognize the great importance of Bessemer's inventions. He secured control of the Siemens and Martin patents on the manufacture of open hearth steel and built an experimental plant at Trenton, N. J., but did not carry the work to a final issue.

Mr. Hewitt's business interests were mostly of a creative character. At one time and another he helped to build up many enterprises. He was a stockholder



ABRAM S. HEWITT.



and for many years a director of the Erie Railroad Company, and he was the principal owner and president of the New York & Greenwood Lake Railroad, which is a part of the Erie suburban system.

Mr. Hewitt was a director in the following named companies, to each of which he gave considerable time: Alabama Consolidated Coal & Iron Company, American Bridge Company, Birkbeck Investment, Savings & Loan Company, Lehigh Coal & Navigation Company, Morton Trust Company, New Jersey & New York Railroad Company, New York, Susquehanna & Western Railroad Company, Northern Railroad Company of New Jersey, Shelby Iron Company, and the United States Steel Corporation. Recently the New York Chamber of Commerce gave Mr. Hewitt a gold medal in token of his long service in the cause of rapid transit. He was also awarded the Bessemer gold medal by the Iron and Steel Institute.

Socially, Mr. Hewitt was popular with young and old. He was fond of congenial company. He was an affable and considerate host, and an uncommonly entertaining conversationist. His presence invariably added animation and pleasure to a social gathering.

Ever since the founding of Cooper Union by Peter Cooper, Mr. Hewitt was its head. For 30 years he gave as much time to it as a college president gives to his charge, and its success is largely owing to his business judgment and executive ability. From the platform of Cooper Union Mr. Hewitt on various occasions enunciated his gospel of wealth and his theories as to the proper and legitimate organization of labor and capital. Mr. Hewitt believed that any man had the right to become rich, but he also believed that the enormous fortunes which were the result, not of labor or of capital, but of the ability to bring both together under the most favorable circumstances, were in a sense trusts for which the individual owner was responsible to the public at large. In 1901 he was made the chairman of the Carnegie Trust, which is the official body in charge of the \$10,000,000 fund which Mr. Carnegie recently gave for educational purposes at Washington.

His wife and several sons and daughters survive him.

### Central Pennsylvania News.

HARRISBURG, PA., January 17, 1903.—In the midst of what had been forecasted as the busiest January in the history of the steel interests of Central Pennsylvania, almost every mill in the district is seriously hampered by the lack of coal and coke and many of them have entirely suspended. With very heavy orders on hand for immediate shipment, these shut downs are working great hardship both to the companies and to their patrons. There is no immediate prospect of resumption, although the situation at Steelton is now a little more hopeful, according to statements made by the officials, than it was earlier in the week.

The Harrisburg Foundry & Machine Works have booked an order for a 100 horse-power engine for the Louisiana State College. The Pittsburgh Coal Company, who now purchase all their engines from the works, received two 300 horse-power engines this week, making 25 engines that have been sold to this corporation alone.

The Harrisburg Pipe & Pipe Bending Works Company are about the only local concern, aside from the Lalance-Grosjean Company, who are selling coal to their workmen suffering from the coal famine, having sufficient coal on hand to continue operations. They are hurrying the completion of their new buildings, which it is expected will be ready for use March 1. The buildings will be placed under roof next week and the installation of the machinery will be commenced at once.

The Pennsylvania Railroad Company have purchased the cinder banks at the St. Charles and Henry Clay furnaces at Marietta and will use the cinder for track making purposes.

The Lackawanna Iron & Steel Company dominated the election of the Cornwall Railroad Company at the meeting held at Lebanon on Wednesday. Capt. B. H. Buckingham was elected president; Walter Scranton, vice-president; Capt. A. M. Patch, superintendent and treasurer; Howard C. Shick, secretary; Walter Scranton, Moses Taylor, A. M. Patch, H. C. Shick and B. H. Buckingham, directors. The Pennsylvania Steel Company at the same time and place, exercised a similar influence over the election of the Cornwall & Lebanon Railroad Company, when the following officers and directors were chosen for the coming year: A. D. Smith, president; E. C. Felton, vice-president; B. Dawson Coleman, secretary; Harry W. Siegrist, A. D. Smith, B. D. Coleman, J. P. S. Gobin, B. H. Buckingham, E. C. Felton, Theo. W. Ely, H. B. Cox and F. S. Smink directors.

The directors of the Frick Mfg. Company of Waynesboro on Wednesday elected these officers for the coming year: President, S. B. Rinehart; vice-president, A. O. Frick; secretary and general manager, Ezra Frick; treasurer, Henry B. Strickler; master mechanic, I. G. Rider; Executive Board, S. B. Rinehart, chairman; Dr. A. H. Strickler, A. F. Rohrer, A. O. Frick, Ezra Frick; Building Committee, Ezra Frick, W. H. Snyder, A. O. Frick, E. Henry Rinehart. General Manager Frick says that the outlook for a prosperous year was never more promising and that the trade in saw mill machinery and portable engines is larger than ever before.

The Portage Iron Works at Duncansville, Blair County, were closed this week on account of scarcity of fuel. The plant, which employs about 500 men, has had a prosperous year and closed with orders booked for months ahead. It is expected that the suspension of operations will last about ten days.

The American Car & Foundry Company at Berwick, are manufacturing cars for the hauling of sugar cane in Cuba.

The Schuylkill Bridge Works, at Pottsville, are to be enlarged.

The Cambria Steel Company of Johnstown have been given a contract by the New York subway contractors for 3750 tons of contact rails, delivery to be made as fast as possible and completed before May 1.

A new machine for planing engine frames is being placed in position in the lathe department of the Pennsylvania Railroad Company's locomotive shops at Altoona. It is one of the largest planers in the world and was built by the Pond Machine Tool Company of Plainfield, N. J. The machine will plane two engine frames at one time.

After a shutdown since Christmas, the Hoopes & Townsend Iron Mill, at Hoopston, has resumed operations.

### The Use of Electric Motors in a Powder Mill.

The International Smokeless Powder & Dynamite Company, whose plant is located near Parlin, N. J., recently made some additions to their works, and have purchased from the Westinghouse Electric & Mfg. Company a 180-kw., two-phase alternator, with switchboard and a number of type C induction motors ranging in size from 7½ to 50 horse-power. The motors will be used to drive apparatus used in the making of smokeless powder, for which purpose the induction motor is especially well suited on account of the absence of commutator, slip rings, or other moving contacts. It is impossible for the motor to spark or flash, and it may be easily started from a switchboard at any distance from the motor or, if the starting switch is near at hand, the switch may be submerged in some nonflammable oil, thus rendering the equipment absolutely safe in the presence of explosive or combustible materials.

The first Westinghouse apparatus was sold to this company two or three years ago, and consisted of a 60-kw. alternator with several motors. Additions were made from time to time in the different buildings and it was soon found that a larger generator would have to be installed. A 120-kw. generator was then bought, which has operated successfully up to the present time, when it is found that both machines are very heavily overloaded. The Powder Company have, therefore, put in the 180-kw. alternator mentioned above. The company state that the entire equipment has given perfect satisfaction and that there has not been a time when the machinery has been shut down for a minute.



# The Iron Age

New York, Thursday, January 22, 1903.

DAVID WILLIAMS COMPANY,	- - - - -	PUBLISHERS.
CHARLES KIRCHHOFF,	- - - - -	EDITOR.
GEO. W. COPE,	- - - - -	ASSOCIATE EDITOR.
RICHARD R. WILLIAMS,	- - - - -	HARDWARE EDITOR.
JOHN S. KING,	- - - - -	BUSINESS MANAGER.

## Industrial and Commercial Conditions in Germany.

As the rule, British Consular reports are not very entertaining reading, but they are informative, and when instructions have been given from the Foreign Office to go to the bottom of things, such instructions are usually followed to the letter. Instructions to this effect would seem to have lately been given to British Consular agents in Germany, for recent reports from that country are full of exact and valuable information. What they show leads to the conclusion that, judged even by British standards, the industrial and commercial position of Germany is wholly unsatisfactory.

The great development of industry and trade made by the German Empire from 1896 to 1900 appears to have given an artificial impetus to a great variety of undertakings in production and distribution which lacked a sound economic basis. The year 1900 witnessed a sharp reaction, inducing conditions which have continued with increasing intensity ever since, and are still distressingly in evidence. It was hoped and believed that the great prosperity of this country would have a reflex influence upon Germany, re-establishing confidence and sending the thrill of a new life through the sluggish pulses of trade, but this has not taken place. The tariff policy of Germany, from which so much was expected, has been a disappointment to economists and statisticians. Those who expected from it a development comparable to that which has taken place in this country under protection to domestic industry are learning the basic truth that like causes produce like effects only under like conditions; and that no amount of ambition and enterprise can offset the lack of native resources and natural advantages. Much of Germany, especially the north, is poor in everything which contributes to national wealth. Her soil is infertile and scantily repays even industrious cultivation. The mineral resources of the empire are limited, and not generally distributed. Centuries of dynastic wars have left their legacy of debt to burden the present and mortgage the future. The ambition of naval and military prestige swells the national taxation beyond the ability of the people to carry it without oppression. Under such conditions protection is likely to work very differently from its operation in a new country rich in undeveloped resources. Apparently, the more Germany increases her protection to domestic industry, agrarian and manufacturing, the less the prosperity of the country. This is not at all surprising.

It seems to be beyond the power of economic legislation or syndicate enterprise to arrest the progress of industrial and commercial paralysis. The readjustment of which this is symptomatic would probably have been effected before the end of 1902 if not interfered with by all sorts of expedients to stimulate the flagging energies of the nation and inspire a confidence which no class of the people can really feel. The lesson of disastrous reaction was too recent and too severe to be quickly or easily forgotten. Between 1896 and 1900 many branches

of industry, notably iron, steel, machinery, textiles and electrical goods, expanded abnormally and great sums were invested in new plants and the extension of old ones. By the end of 1900 it became evident that business in these lines had been overdone. Iron, steel, coal, ores, electrical apparatus, machinery and the metals were the first to reach the condition popularly known as overproduction—a term which is never accurately descriptive, but which conveys a well understood idea. This first manifested itself in the accumulation of goods in factories, the decline in prices and the reduction in the earnings of the State railways from freights. During 1901 the reactionary tendencies were steadily and continuously operative. The year 1902 was not much better, except that the conditions were somewhat more clearly understood and excited less apprehension. The Chinese War was not beneficial to trade; very little advantage was experienced from the prosperity of the United States, and the succession of bank failures which made last year memorable in commercial annals showed how insecure had been the basis of the apparent prosperity of the preceding five years. The expansion meant in great degree the diversion of bank capital from its legitimate employment into speculative manufacturing ventures. Of the part of the banks in producing existing conditions Dr. Frederick Rose, British Consul at Stuttgart, says:

It seems beyond reasonable doubt, now that the full facts are known, that the commercial crisis was aggravated by the conduct of many German banks, which, lulled into a false security by the long duration of the period of prosperity and lured on by the desire of further gains, had not only increased their capital and granted credit in all directions, but had also ventured into speculations generally considered as lying outside the pale of regular banking business. In several grave cases bank and other failures were directly caused by the dishonest transactions of the directors and managers, who have since suffered the penalty of condemnation to long periods of imprisonment; in this respect the failures of the Leipzig and Heilbronn banks and of the Cassel and Terlinden companies may be especially mentioned. These events shook the confidence of capitalists and business men, and caused a run upon the banks, compelling them to hold their deposits ready and to reduce the credit already granted, the immediate result being a credit crisis, which was, however, somewhat alleviated by the measures taken by the Imperial Bank and some other banks of high standing.

In a word, Germany gave the world an illustration of very unsafe banking. The double crisis thus produced struck the iron, steel, coal, electrical and machinery trades most heavily, and subsequently the cotton and linen industries with almost equal severity. For all of them 1902 broke the record for general misfortunes. The increase of exports of German manufactures, of which much is made, is not necessarily an indication of profitable activity, but is assumed rather to show that German goods have been slaughtered in order to dispose of them and enable manufacturers to keep their works running. The situation now existing is that inevitably resulting from a production in excess of the requirements of the markets and of the ability of consumers to buy. There were fewer failures reported in 1902 than during the acute crisis in the last few months of 1901, but many of those were assumed to have resulted from incompetent or dishonest management, and every effort has been made to save and sustain the institutions which are not to blame for their own misfortunes.

From the German point of view less significance attaches to the record of disasters which have followed the collapse of industrial development and commercial expansion than they would appear to warrant. A majority of the failures of the past two years, as Dr. Rose shows, are assumed to be due to mismanagement or fraudulent manipulations by boards of directors. It is contended that the industrial and business system of Germany, while temporarily weakened, rests upon a

sound basis which is unshaken by the crisis through which the nation has lately passed and is still passing. We trust that a critical analysis of the German situation would sustain this optimistic view of the case. How much significance attaches to the claim that the increase in the number of companies floated and the issue of new shares point to a resumption of business on a large scale we do not know. It may be a danger signal of more corporate mismanagement and directorial manipulation. It would appear to one looking at the matter from the outside as a disinterested but intelligently critical spectator that the wisest use of fresh capital would be in sustaining, modernizing and revitalizing the established industries of the Empire. The foundation would appear to be rather narrow for an expansion warranting the issue of stock in new companies to the amount of more than \$400,000,000 during the first half of 1902, especially as the \$300,000,000 seeking like investment during the first half of 1901 have not yet been heard from in the way of an industrial revolution.

Perhaps the most ominous fact in the German situation is the marked increase in the cost of living, coincident with low prices and reduced demand for manufactures, ruinous competition, short hours, the discharge of wage earners in multitudes and the decline in wages. Much of this increase is probably due to the efforts to make German agriculture artificially profitable and swell the incomes of the land owning nobility, which is the keynote of the agrarian policy. The immediate outlook is not encouraging, and it may be shrewdly suspected that the influence of the Imperial policy upon the national temperament is not altogether wholesome. Germany's ambition to occupy the center of the stage, in the focus of the calcium light, among the world powers, is natural enough, but domestic prosperity and the welfare of her own people count for more, and these are not promoted by what seems to interest the Imperial Government most at the moment.

### The Possibility of Currency Reform.

Washington dispatches indicate the possibility, and even the probability, that the Fowler currency bill will pass the House at this session of Congress. Not much encouragement is offered as to the Senate. But the Senate is capable of being influenced by the House and by public opinion. If the country is to avert the autumnal monetary stringency and danger of panic this year it must find some means of making its currency larger and more elastic. Such means are provided in the present Fowler bill, which has been freed from nearly all the complications and controverted matters that made even currency reformers, and especially the banking interests, lukewarm or antagonistic to the Fowler bill of the last session. The present bill confines itself to the authorization of an asset currency, advocated by the Secretary of the Treasury, the Comptroller of the Currency, the New York Chamber of Commerce and financiers generally, and proved safe by experience many years ago in this country, by foreign experience and by the computations of the Actuary of the Treasury from the reports of national banks during the entire existence of the system.

Germany has provision for an emergency circulation, subject to a graduated tax, and the volume of the currency easily contracts and expands within rather wide limits according to the state of trade. England has as rigid a monetary system as our own, but that country is not predominantly agricultural and the need of currency does not vary greatly from season to season. In

Canada and the United States the relatively large agricultural interests demand a material increase in the currency in the fall. Canada allows the banks to issue notes to the amount of their paid capital, a maximum which the banks of the Dominion as a whole have never reached, but they approached it last fall. The currency of the Dominion increases every fall and then contracts, but the contraction is less than the increase; so that there is from year to year an increase in the volume of the currency proportioned to the growth of the population, wealth and business. Mr. Fowler's report points out that in the United States the legal tender notes are of fixed volume; no material expansion is possible in silver; the volume of gold can be increased, but it would be practically impossible to get \$150,000,000 of gold for the crop moving season, and any large amount could only be obtained at great expense. This leaves only the national bank currency that can not only expand with the business of the country, but that can expand and contract with the fluctuations of business. But the price of bonds wipes out all, or nearly all, the profit of a circulation based thereon and the currency is inadequate and inelastic. "In the six billions of liquidated assets of our national banks," says the report, "there is an incomparable security many times over for the credit notes that our trade demands; and no currency can be truly elastic that does not spring into being at the bidding of business and as certainly disappear when that business is finished." The report speaks in strong, but not too strong, terms of the indifference of a rich and intelligent people to the obvious and well supported remedy for an annual monetary stringency which always threatens and sometimes precipitates a panic, and it gives some interesting information regarding the desperate measures of the Treasury Department last fall to relieve the situation.

The bill authorizes banks to issue notes without bond security to the extent of 25 per cent. of their capital; gold or bonds to the amount of 5 per cent. of the notes is to be deposited in the Treasury; a tax of  $\frac{1}{2}$  per cent. on the circulation is to be paid; the notes are to be a first lien on the bank's assets; the limitation of \$3,000,000 a month on the retirement of notes is not to apply to circulation issued under this bill; the notes are to be redeemed in gold over its counter by the issuing bank and by its agent in New York, Chicago or San Francisco, and notes received by one bank issued by a bank in another redemption district shall not be paid out, but returned to the issuing bank for redemption.

The bill would be pretty certain to pass not only the House but the Senate if both bodies were persuaded that the business men of the country demanded it. Formal resolutions of commercial organizations are not particularly effective; petitions are even less so. But if every Senator and Representative received letters from bankers, manufacturers and merchants in his district and State urging the enactment of this bill, and if commercial bodies sent delegations to Washington to urge this before the committees or in personal intercourse, Congress would realize that there was a real demand for the measure and would pass it. Public sentiment forced the repeal of the silver purchase law in 1893, and it can force the passage of an elastic currency law in 1903.

The congestion of traffic on the railroads is not diminished, but has latterly been increasing to such an extent that some of the leading systems have been compelled to notify connecting railroads that they will not accept any freight except live stock, perishable goods



and coal and coke for delivery to points on their own lines. We have had reports for a long time that the railroad companies were overwhelmed with traffic, but they still continued to receive freight whenever it was offered to them. They have now found it necessary to do something to restrict the movement. We believe this is the first instance in the history of the development of railroads in this country when action of this kind has been taken. Heretofore the railroads have always been able to handle so much more freight than that offered to them that even in the most prosperous times rates have frequently been sharply cut.

### Our Foreign Trade in 1902.

December figures for exports and imports have just been published by the Bureau of Statistics of the Treasury Department. The exports of merchandise for the month are the second largest on record, reaching the magnificent total of \$148,006,823, and surpassing all expectations. It is necessary to go back to 1900 to find the largest month, which was October of that year, when merchandise exports reached \$163,389,680. For the last four months of 1902 the exports were heavy, in sharp contrast with June, July and August, in each of which months the figures fell below \$100,000,000 for the first time since midsummer, 1899. Exports declined from October, 1901, until the low point was reached in July of the past year. The short crop of corn in 1901 had much influence on exports, although it was not the only influence operating adversely. The large crops of this year, on the other hand, are just as distinctly observed to have had a stimulating effect on exports in the past five months.

Turning to imports of merchandise, the month of December was the largest on record in this respect, showing a total of \$94,307,204. Imports were unusually heavy for the whole of 1902, due to the highly prosperous conditions prevailing in this country. These conditions not only brought about greater purchases of luxuries, but also of many classes of coarser manufactured products for which the demand in this country exceeded the capacity of domestic works. It must not be overlooked, in this connection, that the conjunction of high prices here and low prices abroad was highly favorable to the development of a large volume of business in the importation of partly manufactured products for re-exportation in more highly finished forms under the drawback system. Despite the hampering regulations governing this trade, to simplify which a determined effort is now being made by manufacturing interests, it will undoubtedly be found, when the detailed figures for the year are available, that 1902 showed a heavy increase on any preceding year.

The excess of exports over imports of merchandise in December was \$53,699,619. Although the importance of the so-called balance of trade is decryd by some profound students of political economy, much consideration is given to this matter in business circles. Considerable uneasiness developed among financiers in the summer months, when exports were diminishing and imports were increasing, lest the favorable balance of trade which had been maintained for so many years should give way to an excess of imports. Large amounts of money had been borrowed in Europe which our bankers hoped to repay by bills against exports of merchandise. The stringency in the money market in the fall months intensified this uneasiness, and shipments of gold to cover an adverse balance of trade at that time would have made a serious situation probably calamitous. But the

heavy increase in exports for the last four months of the year brought distinct relief in a steadily expanding balance of trade in favor of this country. This favorable balance now seems likely to be indefinitely maintained, promising progressively easier conditions in our international financial relations.

The total exports of merchandise for the year were \$1,360,696,355, exceeded by a little over \$100,000,000 in both 1900 and 1901, but surpassing all other years. The total imports were \$969,270,009, the greatest on record, being 10 per cent. larger than the total for 1901 and 50 per cent. larger than the figures for 1898. The huge figures for 1902 show that this country is an important customer of other countries, and that its trade is certainly well worth cultivating. It is not a seller only, although so regarded but a few years since by some of our foreign competitors. The balance of trade in favor of this country for the year was \$391,426,346, which, although the smallest since 1898, was sufficiently large to establish a very comfortable margin on our international exchanges. In this connection the following table, showing the foreign trade of the country, exclusive of gold and silver, for 11 years, is of interest:

Our Foreign Trade for 11 Years.

Year.	Exports.	Imports.	Excess of exports.	Total trade.
1902.....	\$1,360,696,355	\$969,270,009	\$391,426,346	\$2,329,966,364
1901.....	1,465,375,860	880,419,910	584,955,950	2,345,795,770
1900.....	1,477,946,113	829,149,714	648,796,399	2,307,095,827
1899.....	1,275,467,971	798,967,410	476,500,561	2,074,435,381
1898.....	1,255,546,200	634,964,448	620,581,818	1,890,510,714
1897.....	1,099,709,045	742,595,229	357,113,816	1,842,304,274
1896.....	1,005,837,241	681,579,558	324,257,685	1,687,416,797
1895.....	824,860,136	801,669,347	23,190,789	1,626,529,483
1894.....	825,102,248	676,312,941	148,789,307	1,501,415,189
1893.....	875,831,848	766,239,846	109,592,002	1,642,071,694
1892.....	938,020,941	830,490,141	107,530,800	1,768,511,082

The movement of gold during the year was in favor of this country, imports amounting to \$44,162,767, against exports of \$36,030,576, the excess of imports being \$8,132,191. Silver of course showed a reverse movement, imports being \$26,402,935 and exports \$49,272,954, which is an excess of exports of \$22,870,019.

### Removal of the Duty on Coal.

According to the bill which passed the House and Senate last week, and was signed by the President on the 15th inst., all kinds of coal imported for one year from that date will be entitled to a rebate of the full amount of the duty. This enactment makes coal duty free, although it does not in explicit terms place coal on the free list. Paragraph 415 of the Dingley tariff act, which fixes the duty on coal, is as follows:

"Coal, bituminous, and all coals containing less than 92 per centum of fixed carbon, and shale, 67 cents per ton of 28 bushels, 80 pounds to the bushel; coal slack or culm, such as will pass through a  $\frac{1}{2}$ -inch screen, 15 cents per ton of 28 bushels, 80 pounds to the bushel: *Provided*, that on all coal imported into the United States, which is afterward used for fuel on board vessels propelled by steam and engaged in trade with foreign countries, or in trade between the Atlantic and Pacific ports of the United States, and which are registered under the laws of the United States, a drawback shall be allowed equal to the duty imposed by law upon such coal, and shall be paid under such regulations as the Secretary of the Treasury shall prescribe; coke, 20 per centum ad valorem."

The immediate effect of this enactment is to increase the profits of shippers of coal to this country. When existing contracts expire it is of course to be expected that American buyers will insist on their getting the benefit

of the removal of the duty. But perhaps by that time domestic coal may be so plentiful that along the Atlantic Coast at least importations will be largely discontinued. On the Pacific Coast the coal trade may be dominated by Canadian interests.

### Unionism and Violence.

In the prosecution of the members of the Executive Committee of the Brass Molders' Union, indicted on a charge of conspiracy, at Chicago recently, some revelations of a highly sensational character were made in the testimony, and dramatic scenes for several days were not infrequent. During the trial the testimony developed apparently has been especially damaging to the methods exercised by the officers of the union, showing that intimidation was exercised by such officials and that money was paid for picket duty and for maltreating nonunion workingmen. In rebuttal the union is endeavoring to show that it does not sanction such methods, and much is being done to prove that the union not only disapproves of but discourages violence.

Whatever may be the merits or demerits of this especial case there can be little doubt that much difficulty arises from the system of unionism, which from the nature of the contests puts a premium upon violence during strikes which are bitterly fought. It is certainly an act of cruelty to order dependent and unintelligent laborers from their positions, especially during the winter, and it is little less than folly to expect such men to stand idly by and see their places occupied by others. To be told not to be violent or to keep quiet under terrible pressure is little better than farcical, as all the conditions impel them to break from restraint. The lessons which may be derived from the shedding of judicial light into the dark corners of the union system may be of widespread influence in modifying the vicious side of trade unionism.

Inconsiderate workmen in the Washington Navy Yard are said to have caused no little embarrassment to the labor leaders who are advocating the passage of the eight-hour bill, now before the United States Senate. These workmen have requested to be allowed to work overtime, so that they may derive some benefit from the pressure for the completion of gun mounts and other material for new war vessels, on which the navy yard is far behind. To push this work faster the officials decided to employ additional mechanics and divide the entire force into three shifts, working eight hours each. When this condition became known to the men a number advanced the suggestion that the force be divided into two shifts, working 12 hours each, instead of three on eight hours. It happens, however, that the wishes of these workmen must be disregarded, as to work them overtime would be clearly a violation of the existing law covering workmen directly employed by the Government, which declares the employment of extra hours must arise from some grave emergency and the present condition cannot be so construed by the Navy Yard officials. The situation demonstrates what opponents of the pending bill have steadfastly claimed, that the absolute rigidity of an eight-hour day is not to the liking of many of the laboring men, in whose interests it is urged.

New Castle, Pa., has organized a chamber of commerce with over 150 members. A competent man will be secured to look after the interests of the town and to bring new factories in whenever possible.

### The Andrew Carnegie Research Scholarships.

A circular under date of January 5 has been issued by Bennett H. Brough, secretary of the Iron and Steel Institute, 28 Victoria street, London, S. W., England, calling attention to the regulations governing the Andrew Carnegie Research Scholarships, applications for which must be received before February 28. Last year the Andrew Carnegie gold medal was awarded to Dr. J. A. Mathews, New York, and scholarships, each of the value of £100, were awarded as follows: O. Boudouard, Paris; W. Campbell, New York; A. Campion, Cooper's Hill; P. Longmuir, Manchester; E. Schott, Berlin; F. H. Wigham, Wakefield.

The scholarships are awarded annually, irrespective of sex or nationality, on the recommendation of the Council of the Institute. Candidates, who must be under 35 years of age, must apply on a special form before the end of February to the secretary of the Institute. The object of this scheme of scholarships is not to facilitate ordinary collegiate studies, but to enable students who have passed through a college curriculum, or have been trained in industrial establishments, to conduct researches in the metallurgy of iron and steel and allied subjects with the view of aiding its advance or its application to industry. There is no restriction as to the place of research which may be selected, whether university, technical schools or works, provided it be properly equipped for the prosecution of metallurgical investigations. The results of the research must be communicated to the Iron and Steel Institute in the form of a paper to be submitted to the annual general meeting of members, and if the council consider the paper to be of sufficient merit the Andrew Carnegie gold medal shall be awarded to its author. Should the paper in any year not be of sufficient merit the medal will not be awarded in that year.

### Department of Commerce and Labor at Last Assured.

The House of Representatives passed the Department of Commerce and Labor bill on the 17th inst. The fight against the labor and insurance features of the bill was conducted bitterly, but not along political lines. When the final vote was taken only 40 opposed the measure, while 137 supported it.

The bill has already passed the Senate, but was greatly changed in the House. Mr. Mann of Illinois, champion of the bill, said the Senate would agree to the House amendments and the bill would become a law at this session.

The bill provides that the new department shall embrace these bureaus, already in existence: From the Treasury Department, Lighthouse Service, National Bureau of Standards, Coast and Geodetic Survey, Bureau of Immigration and Bureau of Statistics; from the State Department, Bureau of Foreign Commerce, and also the Bureau of Labor, the Fish Commission and the Census office.

The bill establishes a bureau of manufactures and a bureau of corporations. It is the duty of the last named bureau to gather and publish information concerning trusts engaged in interstate and foreign commerce. It will be the duty of the new department to carry into effect the Chinese exclusion laws, now under the Treasury Department, and also to exercise supervision over the Alaskan fur seal and salmon fisheries.

Democrats opposed putting the Bureau of Labor in the new department. They insisted that the needs and condition of labor were such that a separate department should be established, to have control of labor affairs and that a cabinet place should be created for the head of this department. This proposition was lost on a strict party vote, the Republicans opposing.

The greatest contest centered around the provision for a Bureau of Insurance. Democrats and Republicans alike opposed this feature, and it went down to defeat.

A famine is reported in Northern Sweden, affecting 70,000 people widely scattered over a large territory.



### United States Shipbuilding Company.

The governors of the New York Stock Exchange on January 14 passed favorably upon the recommendation of the Committee on Stock List to admit to trading the securities of the United States Shipbuilding Company. The securities admitted are \$20,000,000 6 per cent. noncumulative preferred stock, \$25,000,000 common stock, \$14,500,000 first mortgage 5 per cent. 30-year sinking fund bonds and \$10,000,000 25-year 5 per cent. collateral and mortgage bonds of 1922. The statement submitted by the company is as follows:

The United States Shipbuilding Company have contracts for work, as of July 1, 1902, at contract prices, aggregating \$34,377,408.70, of which there remains uncompleted \$20,605,639.74. Of this there is estimated for completion during the year 1902, \$6,772,350.15; during 1903, \$6,511,757.52, and during 1904, \$7,321,532.07.

The Bethlehem Steel Company have on hand, as of August 1, 1902, work under contract at contract prices aggregating \$16,578,501.81, of which there remains uncompleted work in the aggregate of \$11,728,622.67.

#### GENERAL STATEMENT, JULY 31, 1902.

Assets.	
Cash: At works.....	\$389,317.57
Head office.....	1,503,000.00
	<u>\$1,892,317.57</u>
Accounts and notes receivable.....	1,215,294.76
Contract work in construction, less payments received on same.....	2,385,302.51
Merchandise and supplies.....	1,468,651.21
Miscellaneous assets.....	155,220.07
U. S. Shipbuilding Company bonds in treasury, at par.....	1,500,000.00
Total current assets.....	<u>\$8,616,786.12</u>
Plant investment (including 300,000 shares of Bethlehem Steel Company stock).....	64,768,201.52
Total.....	<u>\$73,384,987.64</u>
Liabilities.	
Accounts payable.....	\$806,453.42
Notes payable.....	1,528,534.22
Total current liabilities.....	<u>\$2,334,987.64</u>
Contingent liabilities.....	50,000.00
First mortgage bonds, series "A".....	\$16,000,000
Coll. and mortgage bonds.....	10,000,000
Preferred stock.....	20,000,000
Common stock.....	25,000,000
	<u>71,000,000.00</u>
Total.....	<u>\$73,384,987.64</u>

#### STATEMENT OF NET EARNINGS FROM JUNE 30, 1901, TO JUNE 30, 1902.

Statement of the various companies acquired by the U. S. Shipbuilding Company:	
Bath Iron Works, as per books.....	\$215,194.62
Hyde Windlass Company, as per books.....	170,740.70
Crescent Shipyards, as per books.....	247,974.33
S. L. Moore Sons & Co., as per books.....	30,291.32
*Harlan & Hollingsworth Company, three years' net earnings, as per books, \$282,407.51; average for the above period of one year.....	94,135.84
Union Iron Works, as per books.....	\$659,959.38
To which we add an estimated loss on account of a strike covering this entire period.....	450,000.00
	<u>1,109,959.38</u>
Eastern Shipbuilding Company, as per books.....	74,225.84
Total.....	<u>\$1,942,522.03</u>

\* The earning capacity of the Harlan & Hollingsworth Company plant should not be based on these figures, as the three years' net earnings have been diminished by an estimated loss of \$180,000 on a steamship contract, not U. S. Government.

#### BETHLEHEM STEEL COMPANY.

##### Statement of net earnings for 12 months ending July 31, 1902:

	Sales.	Net earnings.
August, 1901.....	\$600,829.64	\$92,921.89
September, 1901.....	699,084.12	91,092.92
October, 1901.....	1,119,345.58	160,521.43
November, 1901.....	1,012,387.13	60,127.61
December, 1901.....	852,586.15	115,422.30
January, 1902.....	903,983.03	101,735.40
February, 1902.....	375,560.01	8,101.53
March, 1902.....	765,333.82	125,585.34
April, 1902.....	843,858.89	120,938.37
May, 1902.....	632,070.65	93,908.64
June, 1902.....	859,281.25	134,336.40
July, 1902.....	927,906.85	327,516.20
Totals.....	<u>\$9,592,227.12</u>	<u>\$1,441,208.01</u>

#### GENERAL STATEMENT, JULY 31, 1902.

Assets.	
Cash.....	\$206,110.56
Accounts and notes receivable.....	1,412,872.96
Contract work in construction, less payments received on same.....	2,086,739.02
Merchandise and supplies.....	1,446,093.19
Total.....	<u>\$5,151,815.73</u>

Liabilities.	
Accounts payable.....	\$800,797.27
Notes payable.....	350,000.00
Surplus, current assets.....	4,001,018.16
Total.....	<u>\$5,151,815.73</u>

#### UNITED STATES SHIPBUILDING COMPANY AND BETHLEHEM STEEL COMPANY.

##### Consolidated statement of current assets and liabilities at August 1, 1902:

Assets.	United States Shipbuilding Company.	Bethlehem Steel Company.
Cash.....	\$1,892,317.57	\$206,110.56
Accounts and notes receivable.....	1,215,294.76	1,412,872.96
Contract work in construction, less payments received thereon.....	2,385,302.51	2,086,739.02
Merchandise and supplies.....	1,468,651.21	1,446,093.19
Miscellaneous securities.....	155,220.07	.....
First mortgage 5 per cent. 30-year sinking fund gold bonds of the U. S. Shipbuilding Company in treasury at par.....	1,500,000.00	.....
Total current assets.....	<u>\$8,616,786.12</u>	<u>\$5,151,815.73</u>

Liabilities.	
Accounts payable.....	\$806,453.42
Notes payable.....	1,528,534.22
Contingent liability.....	50,000.00
Total current liabilities.....	<u>\$2,384,987.64</u>

Net surplus of current assets over liabilities.....\$6,231,798.48 \$4,001,018.46

##### Consolidated statement of the net earnings of the United States Shipbuilding Company and Bethlehem Steel Company for three months ending November 30, 1902:

Earnings.....	\$1,163,022.22
Deduct:	
Reserve on estimated profits on contract work in shipbuilding construction.....	\$74,138.04
Accrued interest and sinking fund payment on all United States Shipbuilding Company's bonds for quarter.....	391,666.67
	<u>465,804.71</u>
Of the earnings of \$1,163,022.22, United States Shipbuilding Company earned.....	\$554,021.45
Bethlehem Steel Company earned.....	609,000.77
	<u>\$1,163,022.22</u>

**Lebanon Valley Iron Company's New Mill.**—The 10 and 16 inch combination finishing mills of the Lebanon Valley Iron Company, Lebanon, Pa., have been started up and it is expected that within the next two or three months the entire plant will be in operation. The plant, which was removed from Norristown early in 1902, where it was operated by the Norristown Iron Company, is located on a 12-acre site on the Cornwall & Lebanon and Philadelphia & Reading railroads. The main building is 117 x 423 feet, in which are installed eight puddling furnaces, the combination finishing mill and a 7-inch finishing mill. There is also a machine shop 30 x 80 feet, power house and office building. The officers are Harry H. Light, president; Simon P. Light, treasurer, and William S. Davis, secretary.

**Scotch Locomotive Consolidation.**—A London dispatch states that the Scotch locomotive builders have practically completed a combination of the trade in Scotland. Hitherto there has frequently been mutual rivalry among the builders, which hindered successful competition with foreign makers. They believe that by combining they will be enabled to multiply the recent successes achieved by them in Canada, Japan and India against American and German competitors. The capital of the combination will be between £2,000,000 and £3,000,000. The combination at present embraces three Glasgow firms, Neilson, Reid & Co., the Hyde Park Locomotive Works and Sharp, Stewart & Co., employing 7000 hands.

## The Lovering Drawback Bill.

### Important Hearing Before the Ways and Means Committee.

WASHINGTON, D. C., January 20, 1903.—The Ways and Means Committee on the 15th inst. gave a hearing upon the so-called Lovering bill providing for the amendment of the drawback law. Those who addressed the committee included Representative Lovering, the author of the bill; W. H. Seaver, secretary of the National Wire Corporation of New Haven, Conn.; Walter Wood of R. D. Wood & Co. of Philadelphia, manufacturers of cast iron pipe; Edwin S. Cramp of the Cramp Ship & Engine Building Company of Philadelphia; Edwin S. Tatham of Tatham & Brothers, New York, manufacturers of lead products; N. M. Kline of the Smith, Kline & French Company, Philadelphia, manufacturing druggists; D. S. Chamberlain of the Chamberlain Drug Company, Des Moines, Iowa; J. W. Prizer, secretary of the Vacuum Oil Company, Rochester, N. Y.; John Foord, secretary of the American Asiatic Association of New York, and Whidden Graham of Allen & Graham, New York, drawback experts.

#### Appeal by Mr. Lovering.

In opening the hearing Mr. Lovering said the manufacturers urging the bill had waited a long time for Congress to act, and earnestly desired that legislation should not be further delayed. "This is a simple administrative act," he said, "which does not touch the schedules at all; it does not open up the question of tariff revision, but simply makes operative what was doubtless intended by the framers of the Dingley bill. It is in accord with the laws of all civilized nations not to retain the duty collected on imported materials which are subsequently exported in a manufactured form, and it is contrary to the American spirit of protection to do it. What we ask is that all manufacturers who are engaged in producing goods for export shall be placed on exactly the same footing as those who are manufacturing under the bonded warehouse system, so far as cost of material is concerned. We ask that our manufacturers shall be placed on an equality with foreign manufacturers in competing for the trade of the world. It seems to me that the only question the committee has to decide is whether this can safely be done without a fraud upon the revenue. I do not believe there is any other question in it, and so far as danger of loss by this bill is concerned, I believe it is safeguarded at every point. Now, if this is the case, why should we not have this legislation immediately? It would increase the exports of manufactures, it will necessitate the employment of more labor, and it will enable us to compete with the foreign manufacturers throughout the world in the only way in which we can hope to meet them."

#### The Advantage to Iron and Steel Manufacturers.

W. H. Seaver urged the passage of the bill on the ground that it would be of great assistance to independent manufacturers of iron and steel. He said his company operated plants in De Kalb, Ill., and Oakland, Cal., in addition to New Haven, Conn.

"We have built our plants," said he, "with the distinct idea of engaging to a very large extent in the business of manufacturing wire rope, field fences and wire nails. We are doing some export business with Canada, and under the present drawback regulations we have no difficulty in identifying the material that goes into that business, but when we get into the more highly finished lines of this product the difficulties are very much greater. For instance, in making wire fences, it is possible for us to identify each size and each particular lot of wire that goes through our wire mill to our galvanizing house and into the fence mill, but it is very difficult and requires a great deal of extra expense in bookkeeping, clerks, &c. It would be of great benefit to us and would aid us largely in pushing our foreign business if this matter were simplified.

"Another point is this: We make in our New Haven mill the raw material for the other mills. We use im-

ported billets and domestic billets, depending on the market, but at all times we are using both. Now, it is a very simple matter for us to identify the value of imported and exported material to the satisfaction of the Treasury officials, and if we had the privilege of using American or imported raw material, without regard to the necessity of identification, it would simplify all of these matters, and would enable us to push the export business to a very much greater extent than at present. We are now making connections in foreign countries for fencing in particular, and will soon have wire rope as well, and we cannot express too strongly the interest that we have in this particular measure on that account.

"In regard to section 2 of the bill, relating to shipbuilding material, that is another point that touches us very closely. In the near future we expect to be very large manufacturers of wire rope, and one of the largest consumers of wire rope is the shipbuilding industry. Of course, under the present law they can import wire rope and get a drawback of duty, whereas unless we make our wire rope entirely of imported raw materials—which, of course, we do not want to do, in view of the fact that we make the raw materials ourselves—we are not able to secure the drawback. We are looking to the time in the near future when it will be absolutely necessary for us to find foreign markets, and in that way take care of the increase of production of our various mills."

In reply to an inquiry, Mr. Seaver said his company were not a constituent of the United States Steel Corporation, but were entirely independent. As to the difference in price for steel billets abroad and at home, he said it was now nearly \$10 a ton, which made it possible to buy them abroad and pay the duty more cheaply than to purchase them at home. These conditions, however, were abnormal.

Representative Grosvenor suggested that the duty on billets was clearly not protective at the present time, but Mr. Seaver rejoined that it was protective, but not prohibitive.

"If you do not buy abroad, of whom are you compelled to buy in this country?"

"Of the United States Steel Corporation, the Cambria Steel Company, the Jones & Laughlin Company, or the Pennsylvania Steel Company."

"When you market your finished product, do you sell it abroad at less than at home?"

"Yes, sir, because we get the benefit of the drawback. That is the only difference, and in view of the present conditions, if it were not for the drawback it would be impossible for us to sell any material abroad."

#### The Advantages to Manufacturers of Lead.

Mr. Tatham, who was the next witness, urged the committee to adopt section 7 of the bill on the ground that it would be of great advantage to the American manufacturer and exporter of lead products. He said in part:

"Section 7 of this bill reads as follows:

"That the drawback allowed under existing law on refined metal withdrawn from bonded warehouses, established under authority of section 29 of an act entitled 'An act to provide revenue for the Government and to encourage the industries of the United States,' approved July 24, 1897, and used in the manufacture of articles exported from the United States, shall be equal to the amount of duties which would have been remitted had such refined metal been exported direct from said bonded warehouses in an unmanufactured state.

"Section 29 of the Dingley Tariff act permits the smelting of foreign crude ores or metals in bonded warehouses without the payment of duties. When crude ores or metals are imported under the provisions of this law there is set aside each day in bonded warehouse a quantity of refined metal equal to 90 per centum of the imported metal smelted or refined that day. Section 29 further provides that the refined metal so set aside shall not be taken from said works, except for transportation to another bonded warehouse, or for exportation . . . or it may be removed . . . upon entry and payment of duty for domestic consumption, and the exportation of the 90 per centum of metals hereinbefore provided for shall entitle the ores and metals imported under the provision of this section to admission without



payment of the duties thereon.' That is to say, for every 90 pounds of metal exported, the owner of the bonded smelter receives a credit of 100 pounds on his bond, and for every 90 pounds withdrawn for domestic consumption duty is paid on 100 pounds.

"American and foreign manufacturers of lead products purchase pig lead refined from imported lead bullion in the bonded smelting works established under this law. They each compete in foreign markets in selling the products manufactured therefrom, and as they obtain their material from the same source competition on equal terms is impossible if the law is applied in such a way as to give the foreign an advantage over the domestic manufacturer.

"The sole purpose of section 7 is to remove a discrimination against American manufacturers resulting from a decision of the Treasury Department that only 92 per cent. of the duties paid on lead, refined from lead bullion and withdrawn from a bonded smelter, shall be allowed when said refined lead is manufactured into lead products and exported. The Treasury Department bases this decision on the ground that the waste incurred in smelting lead bullion in a bonded smelter is actually 2 per cent., and that therefore only that percentage should be added to the weight of the lead in the exported articles, in order to ascertain the number of pounds of lead on which drawback shall be paid.

"It would be difficult to point to a greater discrimination in our tariff laws against American labor than is presented by this ruling of the Treasury Department. Suppose that an American and a foreign manufacturer each purchased on the same day 900 tons of lead refined from lead bullion in a bonded smelting warehouse. Two entries would be made to withdraw the lead. One would declare that 900 tons were to be exported, the other that 900 tons were to be withdrawn for domestic consumption on the payment of duty. The lead purchased by the foreign manufacturer would be withdrawn and laden on the export vessel absolutely free of duty. The American manufacturer could only secure possession of the 900 tons which he had purchased by paying duty on 1000 tons.

"The duty on this lead would be at the rate of 2½ cents per pound, or \$42.50 per ton, or \$42,500 for 1000 tons. When this lead is manufactured into shot, lead pipe, white lead, or other lead products, and exported, the drawback would be computed by Treasury officials in this way:

900 tons = 1,800,000 pounds, plus 2 per cent. = 1,836,000 pounds.	
2½ cents.....	= \$39,005
Less 1 per cent.....	= 390
	<u>\$38,615</u>

Amount of duty paid.....	\$42,500
Amount drawback allowed.....	38,615
Difference .....	<u>\$3,885</u>

"The advantage gained by the foreign manufacturer in neutral markets over the American manufacturer would therefore be \$3885 for each 900 tons of lead. The American manufacturer is punished to that extent for employing American labor. If he erects a factory in a foreign country and employs foreign labor, he can secure his lead on the same terms as his foreign competitor, but not otherwise.

"In order that this discrimination against American labor may be clearly understood, we will suppose that a bonded smelter is located at Buffalo, N. Y., where there is also a manufacturer of lead products. We will further suppose that on the other side of the boundary line a Canadian manufacturer is located, who is competing with the American manufacturer for the sale of shot, lead pipe, &c., in the West Indies and South America. The Canadian manufacturer could purchase pig lead free of duty from the bonded smelter and ship the manufactured product in bond free of duty across the American territory to the foreign market. The American manufacturer would pay duty on 100 pounds for every 90 pounds of pig lead delivered to him, and would receive back on the exportation of the manufactured product less than 92 per cent. of the duty paid.

"The opposition of the Treasury Department to this proposed amendment of the law is based on reasons

which are not entitled to serious consideration by this committee. The law authorizing the smelting of metals in bonded warehouse may or may not provide for a greater allowance for waste in the refining process than is actually incurred. No matter what the percentage may be the American manufacturer of lead products is no way interested.

"His only concern is that the law shall be so administered as to place him on an equal footing with his foreign competitors in neutral markets. At the present time the law, as administered by the Treasury Department, inflicts a penalty of 8 or 9 per cent. for employing American labor to convert pig lead into marketable products intended for sale in neutral markets, in competition with similar products manufactured in Europe or Canada from pig lead purchased from American smelting works and exported in an unmanufactured state absolutely free of duty. The quantity of pig lead withdrawn free of duty from bonded smelting works during the last fiscal year and sold to European manufacturers was in excess of 75,000 tons."

In commenting on Mr. Tatham's statement, Representative Dalzell suggested that manufacturers could secure drawback under the present law if they would make up their export orders in such a manner as to keep separate the domestic and imported materials.

#### **Too Expensive to Keep Separate Domestic and Imported Materials.**

This suggestion was taken as a text by Walter Wood, who declared it was impossible to run a plant on such a basis without a very great increase in expenses. He said in part:

"No manufacturing plant could be run on the strength of export orders it hopes to get, and certainly it could not be run exclusively on foreign orders without an enormous increase in the cost. Take our output of 100,000 tons a year and consider how you would divide it up. We do not know on January 1, or the first of any month, what our export orders are going to be. We get the inquiries by cable and we answer them by cable, and we get the orders or lose them. To take these orders we must have some means of running our manufactory so that we can get them. I cannot set aside one of my shops and run it exclusively on export orders, as I do not know what I am going to get. I must have the right to import 5000 or 10,000 tons of pig iron and use it, and if I am fortunate enough to get the foreign orders I should be entitled to export 5000 or 10,000 tons out of my product and get back that money which I have deposited with the Government, which is called 'duties,' so that I can secure those export orders. I cannot have a shop making 3, 4, 10 or 12 inch pipe for export; they may want 16-inch pipe. I must know that my raw materials cost me no more than they do the man who manufactures abroad. That is the whole crux of the trouble that is before the manufacturers under the present ruling of the Treasury.

"Mr. Payne, the chairman, is entirely right when he says that the Treasury officials have gone to a certain extent in ameliorating the conditions, but they have not gone to that extent which enables a man to get his export orders and do his export business on the lowest basis of values and on the equivalent basis of values that his foreign competitor does, and that is what the first section of this bill is intended to secure. If a man imports 10,000 tons of iron and deposits in the United States Treasury \$40,000, he wishes under this first section of the bill to get back his money—it is not the Government's money—when he exports 10,000 tons of stuff of equivalent value and like nature to foreign countries, and when the Government pays him back that \$40,000 it is not giving him a bounty, it is simply returning the \$40,000 of his own money which he has deposited with the Government.

"The Treasury Department has eased up a little in its regulations, but there is too much red tape, and it is to overcome the administrative features of the present drawback law that this bill is before you to-day. This is not a free trade or a tariff bill; it is to simplify the administration of the clauses which are already law in this country; that is all it is for."

"How long are your claims for drawback usually pending in the Treasury Department before payment?" asked Representative Tawney.

"Sometimes it is three weeks and sometimes it is ten months."

"It is as long as two years sometimes?"

"Yes, sir, and some of them are never going to be paid."

"I mean where there is no controversy. I know that one of the millers of the Northwest has \$60,000 that has been due for over two years."

"Yes, sir. It is an outrage for the United States Government to tie up the manufacturers as they do."

#### The Position of Shipbuilders.

Mr. Cramp made an interesting argument in favor of the bill, in the course of which he dwelt with special emphasis upon the difficulty encountered at the present time by American shipbuilders in competing with foreigners, owing to the relatively high price of domestic materials. Among other things Mr. Cramp said:

"This bill is of great importance to the shipbuilders of this country, and of much more importance at the present time than ever before in the history of the country. Five or six years ago the cost of materials in this country was at the same level, and in some cases lower than abroad. Steel shapes and plates could be bought at Pittsburgh at 1 cent per pound, and American manufacturers were shipping enormous cargoes abroad. Since that time an industrial revolution has occurred in this country, the extent of which can hardly be appreciated. Not only have materials doubled in price, steel being worth 2 cents per pound to-day instead of 1 cent per pound, but labor has gone up 30 or 40 per cent.

"The Dingley bill contained an important drawback provision for the American shipbuilder constructing ships, for while a shipyard can buy finished articles abroad and import them for use in the construction of a ship and get the drawback upon the delivery of the ship, you cannot buy in the domestic market and use with benefit of drawback any article manufactured in the United States out of imported materials. As an illustration, the Treasury Department refused to allow drawback of duty paid on foreign billets imported and manufactured into boilers for a Russian battle ship built by our company, a fact that added several thousand dollars to the cost of that ship. The importance of that branch of our business devoted to the building of ships for foreign account and the difficulties we now labor under in competing with foreign shipyards should certainly be understood by this committee. Owing to the hard times abroad the price of materials has gone down until to-day they are about \$27 per ton, whereas the American shipbuilder must pay about \$45 per ton. Yet we must compete for the construction of foreign ships, for our industry has grown to such an extent that there are at least four concerns, any one of which could build all the ships currently needed in the coastwise trade of this country. The ships being built for the export trade to-day aggregate 30 or 40 per cent. more in tonnage than ships for the coast trade. Thus you will see that anything that will reduce the cost of the materials entering into a ship built for foreign account is of the utmost importance to our entire industry.

"There is another point that should be remembered with regard to the American shipbuilding industry, and that is that, because of its limited volume, the yards in this country are not able to specialize as can be done abroad. In one of our large yards you may find five or six different classes of vessels in course of construction at the same time, a battle ship, a cruiser, a boat for river and harbor business, a vessel for the West Indies trade, &c. Now the result is that the attention of the establishment cannot be directed to producing work cheaply, because there is such a division of the facilities of the plant in order to give good results in the construction of all the ships. In Great Britain it is different. Certain yards are devoted to building nothing but cargo boats of enormous size, which, of course, they will build much cheaper than other yards which do not make a specialty of such ships. We sometimes see it stated that the cost of shipbuilding in the United States

is 50 per cent. higher than in Europe, but such comparisons are made between our yards in which all kinds of work is done and British yards where specializing is carried to the utmost limit. Take the Elders' yard, which is equipped for building high speed boats for the transatlantic trade, and ask them to compete on a cargo boat, and you will get a figure at least 20 per cent. higher than could be had from a builder on the east coast of England. This economy is secured by reason of the great bulk of business done, and we cannot specialize in this country until we can have the large volume of trade, which cannot be secured unless we can get help for our industry. The pending bill would be a long step in the right direction, and would be of great benefit not only to shipbuilders, but to domestic manufacturers of all the articles that go into shipbuilding, which they could produce in this country with benefit of drawback and thus obviate the necessity of their importation in a finished form."

Secretary Prizer of the Vacuum Oil Company argued in favor of a drawback on ships' stores, which he said would be of great interest to the producers of lubricating oils and other articles consumed on shipboard.

Messrs. Kline, Chamberlain and Graham argued in favor of the section granting domestic alcohol free of tax for use in articles intended for exportation, and Mr. Foord advocated the passage of the section allowing rebate of wrappings, containers, &c., used on exported goods.

Upon the conclusion of the hearing Chairman Payne said the committee would give early attention to the bill, although he was not in position to indicate what action would be taken thereon.

W. L. C.

#### The New York Automobile Show.

All first night attendance records for a still life exhibition in Madison Square Garden, New York, were broken at the third annual Automobile Show, which opened last Saturday evening, and will be continued until next Saturday night. Indications point to the affair being the greatest show from an exhibition and public interest standpoint in the annals of the expositions of any single American industry.

A complete exposition greeted the 8000 persons who thronged the aisles, galleries, restaurant and basement; for all these parts of the building had been pressed into use to answer the unparalleled demand by exhibitors for show space.

The motor vehicles that were to make up exhibits at the show had been so extensively heralded that those who had followed at all closely the progress of automobile manufacture in this country were prepared for the most part for what they were to see.

The realization of the show was reasonably commensurate with the enthusiastic prophecies that had been made concerning it. In magnitude it was of proportions little dreamed of as possible in this country in so short a time, when the first exposition was held in Madison Square Garden, two years ago.

The advance in the appearance of the vehicles as a whole and in the details of construction was not only creditable, but evidenced a degree of improvement of which the industry itself and Americans at large have reason to be proud. A walk down the aisles and among the stands would seem to indicate that American manufacturers can furnish adequately satisfactory motor vehicles of any motive power, any type and at any price desired.

The acceptance and prevalence of cardinal European features of construction were undeniable. There were imitations of French and German types as close as their makers could make them. There were foreign ideas, tempered by domestic theories. There were out and out radical American propositions of construction. The latter naturally found vent in the steam and electric machines, to which American designers and manufacturers first turned their attention, and to the development of which they have continued to strenuously devote themselves.



Gasoline, however, was shown to be outstripping all other motive powers. The proportion in its favor had greatly increased since last year. Of the 84 makes of vehicles and motors in the exposition 63 are gasoline, 13 steam and eight electric.

Following are statistics of the show: Makes of gasoline vehicles, 63; makes of steam vehicles, 13; makes of electric vehicles, 8; total spaces utilized, 196; total exhibitors, 142; exhibitors of complete vehicles, 77.

## MANUFACTURING.

### Iron and Steel.

It is announced that the St. Louis Blast Furnace Company have leased the Carson iron mine to W. F. McClurg & Co. of West Plains, Mo. Mr. McClurg announces that the mine will be worked as soon as the weather permits and all the ore will be shipped to the St. Louis Blast Furnace Company. It is expected to get out about 50 cars of ore per month for the first few months, and the output will be increased as the mine is opened.

The Eastern Steel Company, Pottsville, Pa., have begun work on four open hearth furnaces, which will have a capacity of 125,000 tons per year. The company expect that their plant will be working full handed by July.

The Republic Iron & Steel Company are installing a 10-inch continuous roughing mill, with an 8-inch finishing train, at the Sylvan works, Moline, Ill. The equipment consists of a Buckeye tandem compound condensing engine, 1200 horse-power capacity; two 250 horse-power Hyde water tube boilers and two Cahall boilers of equal capacity; one Morgan continuous 30-foot heating furnace, with mechanical feeding and delivering devices; three Morgan gas producers; four stands of 10-inch Morgan continuous roughing rolls, and an 8-inch finishing train made by the Youngstown Foundry & Machine Company. The cooling bed, straightening device and shearing appliances will be of their own make and very effective and complete.

The management of the Ohio Steel & Iron Specialty Company, Cuyahoga Falls, Ohio, announce that their plant will be in active operation by March 1. The company are expending \$60,000 in installing new equipment and in reconstruction. Two triple expansion engines, four boilers and four busheling furnaces have already been installed and active progress is making on two open hearth steel furnaces. The mills are also being provided with new rollers, which will give greatly increased capacity. The sales department of the company has been active recently booking orders for delivery during the second quarter of 1903, having secured some desirable contracts in the Central West during the past few weeks.

The Standard Seamless Tube Company of Ellwood City, Pa., have been transferred to the National Tube Company.

The plant of the Elliott-Blair Cold Rolled Steel Company, at New Castle, Pa., will be doubled in capacity and will be removed from its present site near the business center to a location affording more room for expansion. In the southern part of the city.

The Lackawanna Steel Company, at Buffalo, N. Y., are now receiving coke, and when a sufficient supply has accumulated furnaces Nos. 1 and 2 will be successively blown in. The company have now piled up about 400,000 tons of iron ore, which was received during the summer. Parts of the two stacks are from furnaces which the company dismantled at Scranton, Pa. The capacity of the two furnaces is about 250 tons each per day. The Bessemer plant is so far completed that blows will soon be made to produce steel castings.

### General Machinery.

The Fawcett Machine Company, Twenty-eighth and Smallman streets, Pittsburgh, Pa., have plans under way for increasing their present floor space, the installation of additional machinery for gear cutting and special work, and another engine of about 60 horse-power. The cutting of spur gears, bevels, worm gearing, &c., is their specialty, and they have shipped their product to all parts of the United States, Canada, Mexico and Europe. The company recently filled an additional order from the United States Government. Besides the manufacture of gears, they have turned out many high grade machines. Among others may be mentioned undercutting mining machines for one of the large coal companies; patented tin plate machines for the Bray system for the American Tin Plate Company; hot sawing machinery for the Colorado Fuel & Iron Company; a special boring machine for automatically boring large taper holes, heavy double cut off and centering machines, &c.

About \$50,000 worth of shoe machinery, two 250 horse-power boilers, one 250 horse-power engine and one direct connected dynamo of about 200 kw. will be required by the Roberts, Johnson & Rand Shoe Company, St. Louis, Mo., for their new factory. The building will occupy a lot 273 x 375 feet and will probably be several stories high.

Grain cleaning machinery is required by the Great Western Cereal Company, Fort Dodge, Iowa, who will rebuild their elevator, which was recently destroyed by fire, as soon as possible.

The engines and boilers were not damaged, as they are located in a separate power house.

The Consolidated Water Power & Paper Company, Grand Rapids, Wis., will erect a power plant on the Wisconsin River next spring, to develop 7000 horse-power, half of which will be used for their paper mill, and the remainder sold to other concerns. It is estimated that the contemplated improvements will cost \$500,000. The only machinery so far ordered are two 130-inch paper machines from the Beloit Iron Works, Beloit, Wis. J. C. Jacobson is preparing the plans and will supervise the construction.

The Big Fork Electric Power & Light Company, Kallispell, Mont., will install a 400 kw., two-phase alternator of 440 volts, with transformer to raise voltage to 12,000. The alternator will be direct connected to the turbine, and two small exciters and two small turbines will be used. About 200 feet of 60-inch iron penstock will also be bought. None of the machinery has been purchased, as all the details have not yet been worked out.

The firm of Albert Russell & Sons, operating the Newburyport Iron Foundry & Machine Shop, Newburyport, Mass., have incorporated with a paid up capital of \$30,000, as the Albert Russell & Sons' Company. The company manufacture a large variety of marine specialties, such as pumps, cleats, chucks, boilers, engines, &c., to which will be added two new departments—steam heating and plumbing. The plant will be considerably enlarged as soon as plans for the contemplated buildings are completed. William F. Rannels is manager.

The new plant of the Battle Creek Iron Works Company, Limited, Battle Creek, Mich., went into commission on January 5. The foundry is well equipped for castings of any size or quantity up to a maximum of 30 tons per day. The machine shop is well equipped with the finest tools for all kinds of special machine building. The company expect to develop the Burns milling, drilling and tapping machine, which machine tools will be placed on the market upon completion of drawings, patterns, &c.

The Washington Iron Works Company of Seattle, Wash., are making extensive improvements, the estimated cost of which will be \$100,000. Among the buildings being constructed are a machine shop, 70 x 240 feet, two stories in height; power house and foundry, 60 x 60 feet; pattern shop, two stories in height. The buildings will be of brick construction and the pattern shop will be made fire proof. In the foundry will be installed two cupolas. A wharf is also being constructed. The various buildings will be equipped with modern tools. Both steam and electricity will be used as motive power, and a number of pneumatic tools have also been installed. Improvements are to be pushed with all possible speed and the working force will probably be doubled when the improvements are completed. For six months past the company have been unable to keep pace with orders.

On January 16 fire partially destroyed the four-story building at 59-61 South Canal street, Chicago. The two lower floors were occupied by McDowell, Stocker & Co., manufacturers' agents and dealers in machinery and machine tools, who sustained considerable water damage, fully covered by insurance, the fire being confined to the upper two floors. McDowell, Stocker & Co. have established a temporary office at 68-70 South Canal street, and announce that there will be no interruption to business, as they can and are making prompt shipments through their warehouse, located at 54-64 South Clinton street, where they carry an assorted stock of machinery and machine tools.

The William Tod Company of Youngstown, Ohio, are installing one of the largest planers ever built. It is from the Pond Machine Tool Company of Plainfield, N. J., and set up will cost approximately \$30,000. It is 14 feet wide between the housings, 12 feet high from the table to the cross rail, has a 30-foot stroke and weighs about 30,000 pounds. The planer will be driven by a 50 horse-power direct connected motor, the cross rail being operated by an independent 10 horse-power motor. The cutting speeds will range from 12 to 27 feet per minute, with a return speed of 57 feet.

At the annual meeting of the stockholders of the New Castle Forge & Bolt Company, New Castle, Pa., manufacturers of bolts, rivets, chain and all kinds of forgings, Frank Ryman was elected president, J. N. Martin secretary and C. J. Kirk treasurer.

The Hisey-Wolf Machine Company, 75-79 Elm street, Cincinnati, Ohio, manufacturers of the Hisey portable electrical driven grinder, the Hisey electrical driven bench grinder and the Hisey electrical driven hand drill, have leased the adjoining building and will locate their offices and stockrooms at 75 Elm street, while they will devote the entire space at 77-79 to the manufacture of their various specialties. They have installed their grinders and drills in nearly all the large shops throughout the country, and from reports received they give perfect satisfaction. It is their intention to make further addition in the spring, which will give them one of the best equipped shops in the country.

The Bantam Mfg. Company are now located in a well equipped factory at Bantam, Conn., and, we are advised, are manufacturing roller bearing axles, built up wheels, and roller bearing fifth wheels; also that they are prepared to build special

machinery and do good general machinery work. W. S. Rogers, well known in the ball bearing trade, is general manager.

At Pittsburgh the Sommerfeld Machine & Mfg. Company are being formed to take over the machinery business of Rudolph S. Sommerfeld. A large modern foundry and machine shop are to be erected in the Pittsburgh district, and when this is done the present plant at 224 Third avenue will be abandoned. At the present shops machinery, gears and tools are manufactured, and these lines will be continued in the new plant on a larger scale. Rudolph G. Sommerfeld will be president and John Bucock will be secretary and treasurer.

The Westinghouse Electric & Mfg. Company of Pittsburgh are making an extensive exhibit of electrical equipments for motor vehicles and motor vehicle charging stations at the automobile show, now being held at Madison Square Garden, New York. W. M. Probasco and Hayden Eames are in attendance at the exhibit.

The John Steptoe Shaper Company have succeeded the old firm of John Steptoe & Co., at Cincinnati. The company have recently built a large plant on Colerain avenue, and are making preparations to cope with largely increased business. It is probable that George Otting will be elected president and Adam Lauther secretary and treasurer. A new position, that of vice-president and general manager, is to be created, but it has not yet been determined who will fill this position. The company's capital stock is \$125,000, all paid up.

Thomas Potter, Sons & Co., Philadelphia, Pa., manufacturers of oil cloth, &c., will build a two-story machine shop, 65 x 66 feet, at a cost of \$10,000.

W. H. Nicholson & Co., Wilkes-Barre, Pa., have recently made additions to their plant, and contemplate further extensions in the near future. They are doing good business in both their Wyoming automatic eliminator and compression shaft couplings. They have just shipped an order of their expanding mandrels to New Zealand.

The Emmert Mfg. Company, Waynesboro, Pa., manufacturers of Emmert patent universal vises, expect to purchase a bolt cutter this week. They have recently added to their equipment a Jones & Lamson lathe, Brown & Sharpe universal milling machine, Sibley & Ware drill, and a Prentiss Bros. drill with turret attachment. The company expect to build an additional machine shop early in the spring.

#### Boilers, Engines, &c.

C. H. Rust, city engineer, Toronto, Ont., states that the city have voted \$175,000 for the erection of a new pumping engine for the water works system.

It is stated that Sacramento, Cal., are receiving bids until January 26 for a 10,000,000-gallon pump for city works. M. J. Desmond is city clerk.

The Board of Public Works of Chattanooga, Tenn., have recommended that \$115,000 of the proceeds from the proposed bond issue be set aside for a municipal electric light plant. J. C. Howell is chairman.

In the annual report of the Water Commissioners of Atlanta, Ga., it is recommended that a new dynamo and engine in station No. 2 should be purchased at a cost of about \$2800. It is also suggested that an electric lighting station could be established at that place for lighting the city building; the cost of the same would be about \$15,000.

The Board of Water Works, Wellsville, Ohio, will receive bids until February 6 for two 300,000-gallon pumps, two 175 horse-power steam engines, two 200 horse-power tubular boilers, with stack, two 200 horse-power water tube boilers, with stack, and one feed pump. Full information may be had at the office of Robert W. Hunt & Co., consulting engineers, Monongahela Bank Building, Pittsburgh, Pa.

The Witte Iron Works Company, Kansas City, Mo., engine builders, who recently suffered damage by fire to the extent of \$9000, partially covered by insurance, expect to be again in active operation by February 1, at which time they will have increased their capacity 50 per cent. over the 1902 output. They announce that the fire did not interfere with the filling of orders promptly.

The Pittsburgh Gage & Supply Company, Pittsburgh, Pa., are equipping two 3000 horse-power Allis engines of the Pittsburgh Steel Company, Monessen, Pa., plant with the White Star continuous oiling systems. Other contracts are the equipping of three 400 horse-power engines for the Clairton Steel Company, Clairton, Pa., and six 500 horse-power engines in the electric light and power plant of Union Depot, Pittsburgh, Pa., for the Pennsylvania Railroad Company. They are also furnishing systems for Swift & Co., Ft. Worth, Texas; Seere & Co., Moline, Ill., and Amherst Gas Company, Amherst, Mass.

It is announced that the Chicago, Rock Island & Pacific Railway have placed an order for 225 locomotives, to be divided between the passenger and freight service, the total cost being estimated at \$4,000,000. This is one of the largest, if not the largest, single order on record for locomotives. The additional power equipment has been made necessary by the enormously increased traffic of the system, as well as by new construction and acquisition of other lines. The management of the railroad states that the order was placed in September, 1902.

The Western Boiler & Iron Works, Denver, Col., have been incorporated with a capital stock of \$50,000. M. T. Goss, E. B. Hasker and I. M. Goss of Denver are the incorporators. M. T. Goss has been elected president and manager; E. B. Hasker, vice-president and superintendent, and I. M. Goss, secretary and treasurer. The company announce that they will manufacture a number of specialties from steel plate and sheet iron, special attention being given to mine equipment. The company have already purchased a full equipment of machine tools, including a steam power riveter capable of 50 tons compression. It is anticipated that the machinery will be installed in time to commence operations on February 1. The sales department is already soliciting business, promising to execute orders promptly.

The Schuykill Navigation Company, 416 Reading Terminal, Philadelphia, Pa., contemplate the erection of a power house at Reading, the equipment for which has been arranged for.

The Roberts, Johnson & Rand Shoe Company, St. Louis, Mo., will require two 250 horse-power boilers and one 250 horse-power engine for their plant. See *General Machinery*.

The Camden Anchor-Rockland Machine Company, Rockland, Maine, advise us that there is no foundation in the statement that they are to be absorbed by the new corporation which is reported as being organized to merge several of the Maine ship yards.

The Barr Pumping Engine Company, Philadelphia, Pa., will build for the city of Brockton, Mass., a 6,000,000-gallon vertical triple expansion pumping engine for their water works, the contract having been recently signed. This engine will be a duplicate of one furnished the city of Washington, D. C., some time since.

#### Foundries.

The Barry Mfg. Company, Muscatine, Iowa, have recently built a small foundry, 40 x 90 feet, with other storage buildings for raw material. Plans are now being prepared for another building, and construction will be begun as soon as the weather will permit. Part of the material is already upon the ground.

The Central Car Wheel Company have started up their new car wheel plant at McKee's Rocks, Pittsburgh. The new plant is controlled by the Pennsylvania Malleable Iron Company, who operate a malleable iron plant at McKee's Rocks. It is expected that the output of the new plant will be 500 car wheels per day when in full operation.

Schulte & Hinken, founders, Ft. Madison, Iowa, will occupy the Gem City Foundry, which they recently secured and are improving. They will be in active operation about February 15. Their foundry, including a storeroom, is 45 x 75 feet. Adjoining the foundry is the cupola and engine room.

The John Seaton Foundry & Mfg. Company, Atchison, Kan., have been incorporated under the laws of Missouri, with a paid up working capital of \$50,000, thus organizing the business founded by John Seaton, Sr., of Atchison. Associated with Mr. Seaton as incorporators of the new company are his son, Leroy Seaton; Warren Ferguson, bookkeeper; John Jacobs, foreman of machine shop, all of Atchison; James Smith, formerly of the Riverside Iron Works, Kansas City, Mo.; Wm. H. Condit, and Theodore Byram of Kansas City. The business of the company will be conducted at Atchison, as heretofore, and will consist in the manufacture of railroad and general castings and architectural iron work.

The Reeves Pulley Company, Columbus, Ind., state that never were they so completely flooded with orders as at the present time. They have been running their factory night and day, and now have orders on their books which will carry them for the first quarter of 1903. A new cast iron frame small transmission has been accorded such a hearty welcome by the trade in general that orders are coming in faster than they can build the machines, although they have installed quite a number of new machine tools recently. They are now installing additional machinery and contemplate, as soon as the weather will permit, erecting a large foundry. Among other orders for transmissions for paper mill service they mention the following: Price Brothers Company, Xenia Board & Paper Company, Xenia, Ohio; Tarentum Paper Company, Tarentum, Pa.; Peninsular Paper Company, Ypsilanti, Mich.; Worocconco Paper Company, Fairfield, Mass.; King Paper Company, Kalamazoo, Mich. They also just have received an order for a paper mill in Scandinavia and have some other important export orders pending. A new design cast iron small transmission has met with a warm welcome from the foreign trade, and a large number of orders are being received for export. In their pulley department trade has been entirely satisfactory and prospects for the coming year are exceedingly flattering.

The Port Huron Malleable Iron Company, Limited, Port Huron, Mich., contemplate increasing the size of their foundry with the opening of spring, the additional capacity being found necessary by increased business.

#### Fires.

The Laurel Hill, L. I., branch of the Nichols Chemical Company's works was destroyed by fire January 17. The loss is close to \$500,000.

The plant of John Lunn & Co., Camden, N. J., was destroyed by fire January 14. The loss is about \$130,000.



The Pennsylvania Tanning Company's tannery, at Oswayo, Pa., was damaged \$40,000 by fire January 20.

Peck, Benny & Co.'s nail mill, Montreal, Canada, was burned January 19, entailing a loss of \$25,000.

The plant of the Scheffer Piano Mfg. Company, Chicago, Ill., was destroyed by fire January 20. The loss is about \$200,000.

#### Hardware.

R. H. Bloomer Mfg. Company, Council Bluffs, Iowa, refer to the past year as having been a very prosperous one with them. They have added a large warehouse and will materially increase their output. The prospects for 1903 are flattering, orders in hand enabling them to run at least three months, double turn.

The D. Wilcox Mfg. Company, Mechanicsburg, Pa., manufacturers of carriage hardware, bicycle, gun and special forgings, are considering plans for building an addition to their plant in the spring.

Columbus Bolt Works, Columbus, Ohio, suffered some loss from fire a short time since. The fire occurred in a comparatively small rented building, some distance away from the main works, where they operated some threading machinery on large size bolts, bridge rods, &c. It had been a foundry and there was nothing combustible except the roof. This was burned, but caused no injury of consequence to the machinery, which has been relocated and is now in operation. Fortunately they had just completed a large new five-story office and warehouse building, which they were able to move into, vacating room in which they had expected a little later to locate the same machinery. The loss is not severe, but they are temporarily inconvenienced by interruption in their output in the lines above noted, which do not, however, comprise any considerable portion of their business.

The Canada Corundum Company, Toronto, Canada, have started work on a new mill and the development of water power, their intention being to erect a plant with a capacity seven to eight times that of their present mill. It will be well on to the summer before the new plant will be in proper working order. The greater portion of the company's produce is marketed in Canada, the United States and Germany.

Jas. Godfrey Wilson, 3 West Twenty-ninth street, New York, is intending to incorporate his blind and rolling steel shutter business. Mr. Wilson is erecting extensive factory buildings at Berkley, Va., on the south branch of the Elizabeth River, nearly opposite the United States navy yard, to which buildings his plant will be removed in April next, where he will continue to manufacture rolling steel doors and shutters for freight sheds, warehouses and other buildings, wood block flooring, rolling partitions for dividing school rooms and church buildings, Venetian awnings and Venetian blinds and interior trim of a high grade.

Accompanied by a 6-inch rule, the Cleveland Gas & Electric Fixture Company, Cleveland, Ohio, issued a circular, January 1, in which they refer to the demand for their products during the past year as having surpassed expectations, and notwithstanding increased facilities, a mass of work accumulated which resulted, at times, in delayed deliveries. The company believe, however, that with the increased factory space and larger working force with which they have started the new year they will be able satisfactorily to provide for their growing trade.

At the annual meeting of the Emmert Mfg. Company, Waynesboro, Pa., recently held, the capital stock was increased \$10,000, and a dividend of 10 per cent. declared. The company are making a number of improvements in their plant and are installing considerable new machinery. Early in the spring they are expecting to build an additional machine shop. They are intending to place on the market during the next six weeks their Universal jewelers' vise; also a Universal vise for light work, made on the same principle as their tool makers' vise, the jaws being 2 inches and opening 3½ inches.

The Elliott & Reid Company, Richmond, Ind., manufacturers of the Royal spring steel fencing, are making a much heavier fence than heretofore, without materially increasing the cost. The company are installing a modern 100 horse-power gas engine, which will increase their power to 135 horse-power.

The Standard Harrow Company, Utica, N. Y., have made radical improvements in their No. 50 pivot axle cultivator and in their line of riding and walking weedeers. They have recently equipped their plant with electric power and have largely increased their manufacturing and storing facilities. A large amount of business has been booked by the company for the coming season, and indications point to the largest trade in their history.

J. H. Sessions & Son, Bristol, Conn., manufacturers of trunk hardware, including malleable iron and steel corners, clamps and rollers; also light steel washers, riveting burrs and fellow plates, are contemplating making additions to their plant.

F. G. Umbach, Athens, Ga., manufacturer of Umbach's patent harrow, is now manufacturing his own harrow teeth, this work previously having been done in the North.

The New Process Steel & Wire Company, East St. Louis, Ill., have several of their new type bale tie machines in operation, and with others to come forward in a few days will soon

be working to full capacity. They state that the new equipment enables them to turn out a much improved tie, the demand for which has been heavy and is constantly on the increase. Other products manufactured by the company are wire nails and barb wire, while they handle a complete line of iron roofing.

The Union Iron Works, Decatur, Ill., report that during the latter half of 1902 sales more than doubled as compared with the corresponding time during the previous year. The capacity of the plant had been materially increased in 1901, but facilities proved inadequate to take care of the increased volume of trade, which was largely in corn shellers and cleaners, for which there was a big demand on account of the heavy corn crop of last year. The outlook for 1903 is referred to as very bright.

The National Cutlery Company, Philadelphia, Pa., have never had so many orders in hand as at present. They are now making plans to double their output.

Oliver Chilled Plow Works, South Bend, Ind., who make plows exclusively, are enjoying a very heavy trade and are running overtime in an endeavor to care for the orders which they are receiving.

#### Miscellaneous.

The Eddy Electric Corporation, recently incorporated, have taken over the plant at Windsor, Conn., formerly occupied by the Eddy Electric Mfg. Company, and will continue the same line of manufacture as that heretofore conducted by the latter company.

The recently incorporated American Vacuum Can & Machine Company have a plant at Bainbridge, N. Y., where they manufacture vacuum canning machinery, tin cans, glass jars, &c. No new equipment will be required at the present time. The officers are C. C. Hovey, president and manager; W. W. Hovey, secretary and treasurer, and Frank Booth, assistant manager.

The new steel cars ordered by the Pittsburgh & Lake Erie Railroad recently will be equipped with Piper friction draft gear, a new invention. The Piper Friction Draft Gear Company have been formed with a capital of \$50,000 to make these gears. J. M. Schoonmaker, vice-president and general manager of the Pittsburgh & Lake Erie Railroad, is president of the company; B. C. Vaughn is secretary and treasurer. At present the gears are being made by the Gould Coupler Company of New York City.

The American Wave Motor Company of Pittsburgh have been granted a charter with a capital of \$1,000,000, to acquire letters patent on wave motors. The concern have an office in the Empire Building, Pittsburgh, where one of the motors has been on exhibition for some time.

The Mercer and Lawrence County, Pa., coal fields are being entered by another large company, recently organized at Youngstown, and named the National Coal Company. Other capitalists are examining the fields with a view of opening mines in the near future. The Shenango Coal Company of New Castle will soon begin mining at their new shaft near Grove City, Mercer County, Pa., on the Bessemer Railroad. Thousands of acres have been tested within the past year and coal in paying quantities has been found in many parts of this section.

A Pennsylvania charter has been taken out by the West Pittsburgh Water Company of West Pittsburgh, the new town one mile south of the city limits of New Castle. The incorporators are Robert Garland, John W. Garland, F. F. Hodgkinson and John M. Cunningham, all of Pittsburgh, and William K. Huges of New Castle. John W. Garland, president of the Garland Chain Company of Rankin, Pa., owns the controlling interest in the company.

Miles Kavanagh & Co. of Buffalo have secured the contract for putting in the largest automatic fire extinguishing system that has yet been contracted for in Utica, N. Y. It will be in the Majestic Theatre block.

The McKenna Bros. Brass Company, Limited, Pittsburgh, Pa., divided with about 100 of their employees 10 per cent. of the past year's profits. Journeymen employees who have been on the payroll during last year received \$45 to \$70 each. The aggregate amount that the company gave to their skilled craftsmen amounted to upward of \$6000. This liberal division of profits was determined on by action of the Board of Managers of the company a year ago, and will be continued during the business life of the company. The profit sharing ranges according to the wages drawn by the men during the year. The McKenna Bros. Brass Company are a reorganization of A. & T. McKenna, and operate a modern plant at First avenue and Ross street. A. G., W. H., John A., Charles H. and T. Morrison McKenna and Charles S. Dick comprise the Board of Managers.

The Cambria Steel Company, Johnstown, Pa., have completed an order for 800 steel cars for the Virginia Central Railroad.

The Rockdale Powder Company, York, Pa., have secured the machinery for their new powder mill. In the spring they will enlarge their paper mills.

The Massachusetts Dry Dock Company, Boston, Mass., have purchased the Simpson Dry Dock Company of East Boston. This may mean the establishment of one of the largest dry docks in the country.

## The Iron and Metal Trades.

The freight embargo and the Coal and Coke scarcity continue the principal features, notably in the Central West; nor does there seem much prospect of an improvement for some time to come. This affects primarily the cruder products and has less effect upon the more finished lines.

Buying has been light in the leading Pig Iron distributing markets, but maneuvering for position continues. It is claimed that some important consuming interests, notably rolling mills and Cast Iron Pipe works, must soon enter the market. The Southern Iron makers are asking \$17.50 for Gray Forge and \$18.50 for No. 2 Foundry, Birmingham, prices which the rolling mills pronounce too high in view of the figures prevailing for Bars.

Foreign Foundry Irons are selling at tidewater points \$2 and \$3 below the equivalent of domestic Iron, and still the new purchases for importation are limited in volume. We note that one cargo of Middlesbrough No. 3 has recently been bought for shipment here. The heavy movement of Coal for this side is affecting freights, too, and hampers importations of foreign Pig Iron.

It appears that a scarcity is developing in the West of Low Phosphorus Pig, and Chicago advices indicate a sharp advance in Charcoal Pig.

There is very little doing in Steel Billets, either domestic or foreign.

The shipments of the Rail mills, exclusive of the Colorado works, were 2,335,000 gross tons in 1902 of Rails 50 pounds and heavier. This year the tonnage will be larger, since the new Lackawanna mill at Buffalo will contribute its quota, and a number of other works have notably increased their capacity.

Reports that an advance is imminent in Plates are denied by good authority. The tonnage is coming in at a very satisfactory rate. Chicago reports one contract for 12,000 tons for delivery during the second half of this year.

Some good contracts for Structural Material have been placed, including one lot of 9500 tons for the Pennsylvania Railroad at Philadelphia, 4500 tons for the Missouri Pacific and 2500 tons for the buildings of the Ingersoll-Sergeant Drill Company. Further good orders are pending.

Work on the much talked of combination of the independent Bar Iron mills of the Chicago district has been resumed, and it is possible that it may be soon effected.

There has been little improvement in the Sheet trade.

Pittsburgh reports that during the last few weeks there have been heavy purchases in that market by large Steel interests of Heavy Melting Scrap. It is estimated that the total amount involved was 75,000 tons. The market has now quieted down.

In the Metal trade reports are current that a very large order for Copper has been placed by one of the leading electrical companies.

## A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,  
Declines in Italics.

At date, one week, one month and one year previous.

	Jan. 21, 1903.	Jan. 14, 1903.	Dec. 24, 1902.	Jan. 22, 1902.
<b>PIG IRON:</b>				
Foundry Pig No. 2, Standard, Philadelphia .....	\$22.25	\$22.25	\$23.00	\$16.75
Foundry Pig No. 2, Southern, Cincinnati .....	21.75	21.75	22.00	14.75
Foundry Pig No. 2, Local, Chicago .....	23.00	23.50	23.00	16.50
Bessemer Pig, Pittsburgh .....	21.85	21.85	21.25	16.75
Gray Forge, Pittsburgh .....	20.50	20.50	20.25	16.25
Lake Superior Charcoal, Chicago .....	26.50	25.00	25.00	19.50

### BILLETS, RAILS, ETC.:

Steel Billets, Pittsburgh .....	29.50	29.50	29.00	27.50
Steel Billets, Philadelphia .....	*26.50	*26.50	*27.00	29.50
Steel Billets, Chicago .....	30.00	*29.50	*29.50	....
Wire Rods, Pittsburgh .....	34.50	34.50	34.50	34.00
Steel Rails, Heavy, Eastern Mill .....	28.00	28.00	28.00	28.00

### OLD MATERIAL:

O. Steel Rails, Chicago .....	18.50	18.50	18.75	14.75
O. Steel Rails, Philadelphia .....	20.75	20.75	21.00	18.50
O. Iron Rails, Chicago .....	24.00	24.00	24.00	21.00
O. Iron Rails, Philadelphia .....	23.50	23.50	24.00	21.00
O. Car Wheels, Chicago .....	24.00	24.00	24.00	16.50
O. Car Wheels, Philadelphia .....	20.50	20.50	20.00	17.00
Heavy Steel Scrap, Pittsburgh .....	21.00	21.00	21.50	....
Heavy Steel Scrap, Chicago .....	18.00	18.00	18.25	13.75

### FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia .....	1.93½	1.93½	1.92	1.67
Common Iron Bars, Chicago .....	1.81½	1.75	1.75	1.65
Common Iron Bars, Pittsburgh .....	1.70	1.70	1.70	1.50
Steel Bars, Tidewater .....	1.75	1.75	1.75	1.67
Steel Bars, Pittsburgh .....	1.60	1.60	1.60	1.50
Tank Plates, Tidewater .....	2.10	2.10	2.10	1.78
Tank Plates, Pittsburgh .....	1.75	1.75	1.75	1.60
Beams, Tidewater .....	1.75	1.75	1.90	1.75
Beams, Pittsburgh .....	1.60	1.90	2.00	1.60
Angles, Tidewater .....	1.75	1.75	1.90	1.75
Angles, Pittsburgh .....	1.60	1.90	1.90	1.60
Skelp, Grooved Iron, Pittsburgh .....	1.90	1.90	1.90	1.70
Skelp, Sheared Iron, Pittsburgh .....	1.95	1.95	2.00	1.75
Sheets, No. 27, Pittsburgh .....	2.65	2.65	2.65	2.90
Barb Wire, f.o.b. Pittsburgh .....	2.50	2.50	2.45	2.90
Wire Nails, f.o.b. Pittsburgh .....	1.90	1.90	1.85	2.00
Cut Nails, Mill .....	2.10	2.05	2.05	2.05

### METALS:

Copper, New York .....	12.15	12.25	11.65	11.00
Spelter, St. Louis .....	4.80	4.65	4.45	4.10
Lead, New York .....	4.10	4.10	4.10	4.00
Lead, St. Louis .....	3.97½	3.97½	3.97½	3.90
Tin, New York .....	28.00	27.95	26.95	23.62½
Antimony, Hallett, New York .....	7.00	7.00	7.12½	8.00
Nickel, New York .....	40.00	40.00	40.00	50.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York .....	3.79	3.79	3.79	4.19

\* Foreign.

## Chicago.

FISHER BUILDING, January 21, 1903.—(By Telegraph.)

An interesting report is current that because of the heavy demand for Steel and the inability of the large interests to obtain all the Low Phosphorus Pig necessary for their requirements inducements are to be offered to the furnaces now making Foundry Iron, to go on to Bessemer and Low Phosphorus Pig. There seems to be reason to believe that such a move is contemplated, but it is so revolutionary in character that much doubt is entertained as to its practicability. Aside from this rumor the Pig Iron market is without prominent feature, the volume of business being very light and mainly confined to urgent requirements for Bessemer and Charcoal brands. Foundry Irons are extremely quiet, buyers holding off severely, but yet with the exception of a few furnaces in the Birmingham district producers do not appear anxious to push sales. The Coke situation continues aggravating, curtailing production of both Pig and Castings to a considerable extent. More than usual interest is centered in the anticipated action of the largest interest in the market in regard to official prices of various forms of Steels for the 1903-4 season. Large buyers anticipate higher prices in many cases, an advance of \$2 per ton in Plates being imminent, but the rank and file of consumers are skeptical. At the same time it is significant that producers in many cases have notified consumers that they would be consulting their own interest to place their orders early. How far this effort to stimulate business may be due to prevision is problematical. Steel Billets, both domestic and foreign, are conspicuous for absence of trading. Plates continue to be prominent for



continued activity, with the placing of considerable tonnage for the latter half of the current year. Sheets, Pipe and Tubes hold the firmer tone recently developed, with some further improvement apparent. It is remarkable that buying of Rails continues on a liberal scale, but the sold up condition of the Western mills throws nearly all the business to the East. It is an unusual feature to find a strong tone prevailing in Copper, Lead and Spelter simultaneously with Iron and Steel, but prices of all these metals show a strong tendency toward appreciation.

**Pig Iron.**—As far as the tonnage is concerned the Pig Iron market during the week has been very quiet, sales being confined mainly to 100 to 500 ton lots and largely for Malleable and Charcoal brands, Coke Irons being neglected to a considerable degree, as most of the large consumers are obtaining a more satisfactory supply of Iron on contracts placed some time ago. Local furnaces are still crippled by an inadequate fuel supply and scarcely any Foundry Grades are available either for present delivery or delivery during the next three or four months. Under the circumstances prices are nominal on such brands. Southern Coke Iron, however, seems to be in more ample supply, with a majority of the Southern producers asking on the basis of \$18.50 for No. 2, Birmingham, for deliveries beginning in February and running through almost any month in the year. There are a few furnaces in the South, however, reported willing to accept \$18 for No. 2 Foundry at the furnace, but even this price does not seem to be attractive to consumers. Small lots, however, have been sold for quick shipment as high as \$19. As far as the delivery beyond July is concerned buyers are entirely indifferent, scarcely even making an inquiry for such periods. They continue to test the market for the second quarter, however, to a considerable extent, although no transactions of moment have resulted recently. Charcoal Iron continues to meet a more urgent demand, Malleable foundries seeking such grades as well as Bessemer Iron. Ten days ago Lake Superior Charcoal was sold as low as \$25. To-day it would be difficult to purchase even at \$26, and some sales have been made at \$27 to \$27.50 for shipments beginning in February and running for several months, while some spot Charcoal brands have been sold at \$28.50. Southern Car Wheel Iron has been sold in lots of 500 tons at \$28.35, Chicago, for forward delivery. Several 100-ton lots of Standard Bessemer and one lot of 500 tons have been sold at \$24.25 to \$24.50, Chicago. Malleable Bessemer is available at \$23 for the second quarter, but would command \$24 for the first quarter if any were offered for quick shipment. There is said to be considerable inquiry for Southern Forge Iron, but little is offered either for spot or future delivery. The latter part of last week one large local buyer was in the market for 2500 to 3000 tons of No. 4 Foundry. This buyer, however, has since withdrawn from the market. Prices are again revised to meet changing conditions, outside prices being for the first quarter and inside prices for the second quarter, while spot Iron to a limited extent would bring about 50c. per ton over outside quotations:

Lake Superior Charcoal.....	\$26.50 to \$27.50
Local Coke Foundry, No. 1.....	24.00 to 24.50
Local Coke Foundry, No. 2.....	23.00 to 23.50
Local Coke Foundry, No. 3.....	22.00 to 22.50
Local Scotch, No. 1.....	24.50 to 25.00
Ohio Strong Softeners, No. 1.....	26.30 to 27.30
Southern Silvery, according to Silicon.....	26.15 to 27.15
Southern Coke, No. 1.....	23.85 to 24.35
Southern Coke, No. 2.....	22.85 to 23.35
Southern Coke, No. 3.....	21.85 to 22.35
Southern Coke, No. 1 Soft.....	23.85 to 24.35
Southern Coke, No. 2 Soft.....	22.85 to 23.35
Foundry Forge.....	21.35 to 21.85
Southern Gray Forge.....	20.35 to 20.85
Southern Mottled.....	19.35 to 19.85
Southern Charcoal Softeners, according to Silicon.....	25.85 to 27.85
Alabama and Georgia Car Wheel.....	28.35 to 28.85
Malleable Bessemer.....	23.00 to 24.00
Standard Bessemer.....	24.00 to 24.50
Jackson County and Kentucky Silvery, 6 to 8 per cent. Silicon.....	31.30 to 32.30

**Bars.**—There is a strong undercurrent of interest in both Steel and Iron Bars, and it is significant that the large local jobbers have largely covered their wants for Soft Steel Bars, and in some instances for Bar Iron, for months to come. Smaller consumers, however, although warned, have seen fit to disregard the suggestion of the largest selling interests. The only contract of moment for Bar Iron that has been made lately is one lot of 300 tons for delivery during the second quarter of the current year on the basis of 1.75c., Chicago. There seems reason to believe that the much talked of combination between independent Bar Iron mills will be accomplished within the near future, if at all, and with this in view the mills seem more disposed toward getting rid of old low priced contracts than accepting new business except at higher prices, most of the mills demanding 1.80c., Chicago, with small lots selling at 5c. to 10c., higher. The recent freight advance is reflected in quotations, consumers being asked to pay 1½c. additional to cover the higher cost of transportation. Hoops and Bands have met a fair inquiry, but the volume of business has been light. The following are the prices current for prompt shipment: Bar Iron, 1.81½c. to 1.91½c.; Soft Steel Bars, 1.76½c. to

1.86½c.; Hoops, 2.16½c. to 2.26½c.; Angles, 1.86½c. to 1.91½c., base, mill shipments. Merchant trade has been only moderate, but prices have remained firm: Bar Iron, 2.15c.; Soft Steel Bars, 2c. to 2.25c.; Angles, 2.50c.; Hoops, 2.40c., base, from store.

**Structural Material.**—Several large contracts are pending, car builders being the principal factors in the market, but there is also some inquiry for bridge construction and material to cover requirements of local contractors. Actual transactions, however, have been relatively light, being little over 1000 or 2000 tons all told. The following are the prices current: Beams, Channels and Zees, 15 inches and under, 1.75c. to 1.90c.; 18 inches and over, 1.85c. to 2c.; Angles, 1.75c. to 1.90c. rates; Tees, 1.80c. to 1.90c.; Universal Plates, 2c. to 2.25c. There has been only a moderate inquiry for shipments from local yards, but prices have remained steady, as follows: Beams and Channels, cut to length, 2¼c. to 2½c.; Angles, 2.25c. to 2.50c.; Tees, 2.30c. to 2.55c., at local yards.

**Plates.**—There has continued to be quite an active demand, mainly for bridge construction, sales aggregating 14,000 tons, one contract being for 12,000 tons, all for delivery during the latter half of the current year. The market continues very strong. The following are the prices current: Tank Steel, ¼-inch and heavier, 1.75c. to 2c.; Flange, 1.85c. to 2.10c.; Marine, 2.10c. to 2.20c. There has been a fair inquiry for shipment from local stocks, and the market has continued strong at the following prices: Tank Steel, ¼-inch and heavier, 2.25c. to 2.35c.; Tank Steel, 3-16 inch and No. 8, 2.30c. to 2.45c.; Flange, 2.50c. to 2.60c., all f.o.b. warehouse, Chicago.

**Sheets.**—Several large contracts for Galvanized Sheets have been closed within the past ten days, the market showing a continued tendency to harden, with the improvement reflected in higher prices for small lots for shipment from local stocks. Black Sheets have shown a less degree of firmness than have Galvanized. The irregularity due to keen competition has not entirely disappeared, but the outlook is better than for months. The following are the official prices for Black Sheets, mill shipment, carload lots, f.o.b. Chicago: No. 20, 2.55c. to 2.60c.; Nos. 22 and 24, 2.60c. to 2.70c.; No. 26, 2.70c. to 2.80c.; No. 27, 2.80c. to 2.90c.; No. 28, 2.90c. to 3c. Small lots from store continue to sell at 15c. to 20c. above mill prices. Galvanized Sheets are selling at the following net prices for mill shipment: No. 27, 3.33c. to 3.60c., while small lots from store have been advanced to 75 and 5 to 75 and 7½, equivalent to 3.70c. to 3.80c., Chicago.

**Cast Pipe.**—The market is steady, with a fair demand for small quantities from railways and gas companies. Among the more important sales during the week are 1000 tons of Gas Pipe to the Cincinnati G. L. & Coke Company and 1000 ditto to Minneapolis Gas Company on the basis of quotations. The following are the prices current, f.o.b. Chicago: 4-inch, \$36; 6-inch, \$35; 8-inch and upward, \$34 for Water Pipe, Gas Pipe selling at \$1 per ton higher, f.o.b. Chicago. For small quantities 50c. to \$1 per ton more is charged.

**Billets.**—Business in the local market is light, being confined to small lots of domestic Steel, without essential change in prices. There is considerable interest here, however, centered in the resale of about 16,000 tons of German Billets, which are held at \$26.50, Philadelphia. Prices on foreign material, delivered Chicago, are little better than nominal. Domestic Open Hearth Billets are quoted at \$36 to \$40, according to analysis, buyer and time of delivery, and rerolling Bessemer Billets at \$30, f.o.b. Chicago. Business is pending on 8000 tons of Tin Bars, which are held at \$33.

**Merchant Pipe.**—There has continued to be a fair inquiry, mainly for small lots, but some large contracts are pending. The following are the official prices, Chicago, base, random lengths, for mill shipment, carloads only:

	Steel Pipe.		Guaranteed Wrought Iron.	
	Black.	Galvd.	Black.	Galvd.
1/8 to 1/4 inch.....	66½	56½	63½	53½
1/4 inch.....	68½	58½	65½	55½
3/8 to 6 inches.....	73½	63½	70½	60½
7 to 12 inches.....	71½	61½	68½	58½

**Boiler Tubes.**—There has been an improved demand with a little firmer feeling, but without change in prices. The following table of discounts is current for mill shipment:

	Steel.	Iron.
1 to 1¼ inches.....	43½	38
1¼ to 2½ inches.....	56	36
2½ to 5 inches.....	61	46
6 inches and larger.....	56	36

The demand from store has increased somewhat, the market reflecting the improvement noted elsewhere. Quotations continue steady on the basis of the following schedule of discounts:

	Steel.	Iron.
1 to 1¼ inches.....	35	35
1¼ to 2½ inches.....	47½	32½
2½ to 5 inches.....	55	42½
6 inches and larger.....	47½	..

**Merchant Steel.**—The market has been quiet as far as new business is concerned, but there are quite a number of specifications being received on old contracts. The demand for Cold Rolled Shafting has improved, with some sales of moment taken by outside interests for future shipment. Tool Steel has been in moderate demand. For mill shipment prices are as follows: Smooth Finished Machinery Steel, 2.01½c. to 2.11½c.; Smooth Finished Tire, 1.96½c. to 2.11½c.; Open Hearth Spring Steel, 2.66½c. to 2.76½c.; Toe Calk, 2.31½c. to 2.46½c.; Sleigh Shoe, 1.86½c. to 1.96½c.; Cutter Shoe, 2.41½c. to 2.61½c. Ordinary grades of Crucible Tool Steel are quoted at 6½c. to 8c. for mill shipments; Specials, 12c. upward.

**Rails and Track Supplies.**—There has continued to be a fair inquiry for Standard and Light Sections, with sales of about 1100 tons of Light Rails for early shipment taken by local mills and about 9000 tons of Standard Sections have been sold for Western shipment, the contract being booked by local representatives of Eastern mills. Official prices have remained strong at \$28 for Standard and \$27 for second quality, mill shipment. Light rails have sold readily at \$35 to \$40, according to weight, with a premium obtained for small amounts. The demand comes largely from railways, cement mills, mining companies and contractors. Track Supplies have continued in good demand, which has been readily met at previous prices for prompt shipment. Prices are as follows: Splice Bars or Angle Bars, 2c.; Spikes, 2.50c.; Track Bolts, with Hexagon Nuts, 3.10c. to 3.25c.; Square Nuts, 2.95c. to 3.10c.

**Old Material.**—There has continued to be quite a good demand from mills, notwithstanding several have been closed during the past ten days, and as receipts are less than usual at this season the market continues firm and prices are well sustained. There is some little inquiry for Relaying Rails, but it results in but little business. The following are the prices per gross ton, Chicago:

Old Iron Rails.....	to \$24.00
Old Steel Rails, mixed lengths.....	\$18.50 to 19.00
Old Steel Rails, long lengths.....	23.50 to 24.50
Heavy Relaying Rails.....	31.00 to 31.50
Old Car Wheels.....	24.00 to 24.50
Heavy Melting Steel Scrap.....	18.00 to 18.50
Mixed Steel.....	15.50 to 16.00

The following quotations are per net ton:

Iron Fish Plates.....	\$21.00 to \$22.00
Iron Car Axles.....	24.50 to 25.00
Steel Car Axles.....	23.50 to 24.00
No. 1 Railroad Wrought.....	19.50 to 20.00
No. 2 Railroad Wrought.....	17.50 to 18.00
Shafting.....	20.00 to 21.00
No. 1 Dealers' Forge.....	16.00 to 16.50
No. 1 Bushelling and Wrought Pipe.....	14.00 to 14.50
Iron Axle Turnings.....	14.00 to 14.50
Soft Steel Axle Turnings.....	14.50 to 14.75
Machine Shop Turnings.....	13.50 to 14.00
Cast Borings.....	10.00 to 10.50
Mixed Borings, &c.....	10.50 to 11.50
No. 1 BOLLERS, cut.....	14.50 to 15.00
Heavy Cast Scrap.....	17.25 to 17.75
Stove Plate and Light Cast Scrap.....	13.00 to 13.50
Railroad Malleable.....	16.25 to 16.50
Agricultural Malleable.....	15.00 to 15.50

**Metals.**—About ten days ago several large contracts were placed for Copper. During the past few days, however, the market has been quiet, large buyers having covered, but the market remains firm at the recent advance. Lake is held at 12c. in car lots and 12¼c. in a jobbing way. Pig Lead has met a better demand for Eastern shipment and the market has continued firm at 4.05c. in 50-ton lots, 4.07½c. in carload lots and 4.10c. in a jobbing way. Spelter has suddenly jumped with an active demand at the advance, sales being made at 4.75c. in carload lots, f.o.b. Chicago. The demand comes mainly for Galvanizing purposes. Old Metals have continued strong at the recent advance in sympathy with ingots, with an improved demand at the following prices: Heavy Cut Copper, 11c.; Red Brass, 11c.; Copper Bottoms, 10c.; Lead Pipe, 3.90c.; Zinc, 3.80c.

**Coke.**—The market has not changed essentially and the ovens are disposed to perpetuate present conditions by refusing to make long time contracts, preferring to sell for quick shipment, the prices prevailing of course netting a liberal profit on the present market. Sales of Connellsville Coke are made mainly at \$10 and Virginia Coke at \$9 to \$9.50, spot, track. An advance of 15c. per ton in freight from the Connellsville district was announced on January 12 and is effective on January 24.

## Cincinnati.

FIFTH AND MAIN STS., January 21, 1903.—(By Telegraph.)

There is no material change in the Pig Iron situation as shown by reports received at this point. There is to-day a greater unanimity of expression regarding the situation, both as to prices and outlook, than the field has seen for many a day. The demand, of course, is not great. What trading there is in a small way in Foundry Iron, and goes to show that as far as the immediate point is concerned there is no shortage in these grades. A few of the furnaces are asking a premium of 50c. for prompt delivery,

but in the main there is but one quotation given by those who really are out after business, on the basis of \$18.50, Birmingham, for No. 2 Foundry to cover the entire year. The only feature in the situation upon which there is any unusual comment is that which outlines the market so far as Mill Irons are concerned. These are still quoted on the basis of \$16.50 to \$17.50, Birmingham, for Gray Forge, and No. 4 Foundry is also included in this quotation. There is, however, very little offering at the minimum figure quoted. In the main, the furnaces are standing on \$17.50 for the entire year. On this basis buyers seem indisposed to invest, though there is plenty of evidence that a good round lot of Mill Iron could be sold now if the prices were more in line with those of Muck Bars. Rolling mill managers assert that, on the basis of \$16.50 to \$17.50, and the present price of Bars, it is a losing deal on every ton of Pig Iron sent through their mills. There have been declarations made regarding the shutting down of mills unless the Pig Iron goes down materially; but all the same the Pig Iron market to-day has every appearance of strength, and selling agents are confident that the furnaces, with order books in their present condition, will not be very apt to make much concession in the way of prices. Freight rates from the Hanging Rock district, \$1.15, and from Birmingham to Ohio River points, \$3.25. We quote, f.o.b. Cincinnati, for delivery throughout the year, as follows:

Southern Coke, No. 1.....	\$22.25 to \$23.00
Southern Coke, No. 2.....	21.75 to 22.50
Southern Coke, No. 3.....	21.25 to 22.00
Southern Coke, No. 4.....	19.75 to 20.75
Southern Coke, No. 1 Soft.....	22.25 to 23.00
Southern Coke, No. 2 Soft.....	21.75 to 22.50
Southern Coke, Gray Forge.....	19.75 to 20.75
Southern Coke, Mottled.....	19.75 to 20.75
Ohio Silvery No. 1.....	31.15 to 32.15
Lake Superior Coke, No. 1.....	25.15 to 25.65
Lake Superior Coke, No. 2.....	24.15 to 24.65
Lake Superior Coke, No. 3.....	23.15 to 23.65

### Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	\$27.75 to \$28.75
Lake Superior Car Wheel and Malleable.....	27.50 to 28.50

**Plates and Bars.**—The market is showing a little more activity than has been manifested for a few weeks. This, however, is mainly in the way of specifications on old orders. New business is scarce. We quote, f.o.b., as follows: Iron Bars in carload lots, 1.92c., with half extras; same, small lots, 2.20c., full extras; Steel Bars, carload lots, 1.72c., with half extras; same, small lots, 2.20c., full extras. Plates are quoted nominally, ¼-inch, in carloads, 1.70c.; same, 3-16, 1.80c. As a matter of fact, however, mills having Plates to ship are getting 2.15c. without trouble. I-Beams and Channels, 1.70c., base. All prices f.o.b. Cincinnati.

## Philadelphia.

FORREST BUILDING, January 20, 1903.

The week has brought with it no new developments of any importance, and it is hard to say in what direction the turn will be when the market starts up. Opinions are somewhat diversified, although the general impression is that the volume of business will be large, probably larger than last year. If this proves true, prices will surely not be much lower, but, of course, there must be some distinct movement toward activity before the market crystallizes into firmness. For the present it has no distinct character, either as regards prices or demand, and its natural development is therefore looked forward to with considerable interest. The chances are so evenly balanced that suggestions of either coming weakness or coming activity might be misleading, so that there is no alternative but to consider the immediate conditions and wait developments. The fact that the December output of Pig Iron was 1,572,000 tons, besides imports of 50,000 to 60,000 tons more, and that the market has been practically unshaken, is a significant feature and not a bearish one in any sense of the word. Prices for extended delivery are a little easier, but with improved prospects for Coal and transportation it would be a natural result for Pig Iron to shade off a little. Still these things are not a certainty yet. Bad weather might affect transportation adversely for a month or six weeks to come, and while the prospects for Coal and Coke are better they are still much below requirements. It may be said, therefore, that prices are about the same as last week, and the demand somewhat hesitating, but the general trend has been toward stability at the slightly lower figures which have been established since the first of the year.

**Pig Iron.**—The Pig Iron market is in a peculiar condition, and in spite of the large production some well informed parties are disposed to look for another period of scarcity. A good deal of reliance has been placed on foreign Iron, but so much freight room is required for Coal that it is difficult to secure room for Iron, unless at higher rates. There is a possibility, therefore, that with a falling off in receipts from abroad the entire burden may be thrown on American Iron. This is made more probable by the fact that new purchases in foreign markets are not being made to



any extent, for two reasons: 1, that it will cost more, c.i.f., while, 2, there is some doubt whether prices can be held firm if our home furnaces maintain or increase their output. The possibilities therefore are somewhat startling, and although the probabilities favor sufficient Iron at present prices, yet the fact cannot be disguised that the margin is very narrow, and we are by no means immune from a period of scarcity such as that during 1902. Stocks on furnace banks are less than 100,000 tons, and with decreased receipts from abroad there is reason to believe that there would be a good deal of scrambling for material. With open weather, however, and larger supplies of Coal and Coke there is little doubt that there will be adequate supplies of Pig, as there is no great furore to buy for long deliveries. Sales during the week have been in moderate volume and at fairly uniform prices. Sellers are disposed to meet buyers' requirements, both for short and long deliveries, but for the present there appears to be no necessity for going below to-day's quotations, which are about as follows: Cargo lots of Middlesbrough No. 3, about \$17.50, German (Westphalia), \$19.75 to \$20.25 and Hematites at \$20 to \$20.25 for full cargoes, c.i.f., duty paid, cash against documents. General quotations for deliveries in buyers' yards, usual terms, are as follows:

No. 1 X Foundry.....	\$24.00 to \$25.00
No. 2 X Foundry.....	22.25 to 22.75
No. 2 Plain.....	21.50 to 22.00
Gray Forge.....	20.50 to 21.00
Middlesbrough, No. 3.....	21.00 to 21.50
Scotch.....	22.50 to 23.50

**Billets.**—It is difficult to give exact quotations, as so much depends on quantity, specifications, deliveries, &c. The range for foreign, however, would be from \$26.50 up and for American from \$31.50 up.

**Plates.**—There is no special movement at present, although there is a fair inquiry which, in connection with a considerable amount of back business, keeps the mills fully employed. The shortage of coal is still in evidence, but better conditions are hoped for in the near future, and as regards Plates there is likely to be sufficient business to give full employment during the winter and spring months. Prices unchanged as follows: Small lots, 2.10c. to 2.15c.; carload lots, 1/4-inch and thicker, 2c. to 2.05c.; Universals, 2c. to 2.05c.; Flanges, 2.10c. to 2.20c.; Fire Box, 2.25c. to 2.30c.; Marine, 2.30c. to 2.35c.

**Structural Material.**—There is more business around and prices have a firm undertone, although there is no quotable change. Deliveries of some sizes are subject to delays, but in most cases 30 to 60 days is about all that is required to furnish a full line. The future is a little uncertain, but the general impression is that a large volume of business may be expected, provided nothing unforeseen occurs. Prices unchanged, as follows: Angles, Beams or Channels, ordinary sizes, 1.73 1/2c. to 1.78 1/2c., carload lots, as a minimum.

**Bars.**—Business is extremely dull, but with so many mills short of coal the output is very irregular and much below what it would be under normal conditions. Moreover, there is no inducement to make a large output unless cost can be reduced or selling prices increased. Meantime prices are about the same as last week—viz.: 1.93 1/2c. to 1.98 1/2c. for Refined Iron and 1.73 1/2c. to 1.80c. for Steel, carload lots as a minimum quantity.

**Sheets.**—There is no change in prices. Demand has improved and is now steady. Mills are very full of business, but badly hampered by inability and uncertainty of fuel delivery. With this exception conditions are favorable for continued activity.

**Old Material.**—The market is very dull owing to so many mills being closed for want of fuel. Quotations are more or less nominal, but bids and offers about as follows for deliveries in buyers' yards:

Old Steel Rails.....	\$20.75 to \$21.25
Heavy Steel Scrap.....	20.00 to 21.00
Low Phosphorus Scrap.....	26.50 to 27.50
Old Steel Axles.....	25.00 to 26.00
Old Iron Rails.....	23.50 to 24.50
Old Iron Axles.....	29.00 to 30.00
Old Car Wheels.....	20.50 to 21.50
Choice Scrap, R. R. No. 1 Wrought.....	22.50 to 23.50
Country Scrap.....	20.00 to 21.00
Machinery Scrap.....	19.75 to 20.25
No. 2 Light Scrap.....	18.00 to 19.00
No. 2 Light (Ordinary).....	14.50 to 15.00
Wrought Turnings.....	16.00 to 16.50
Wrought Turnings, Choice Heavy.....	17.00 to 17.50
Cast Borings.....	10.00 to 10.50
Stove Plate.....	14.00 to 15.00

Marcel Wormser & Co., Strasbourg, Alsace, manufacturers of Marcel Iron, used in the manufacture of Files and Machine Tools, have appointed the De Haven Supply Company, Philadelphia, Pa., agents for their product in this country. The latter company advise us that they will in the near future carry an extended line of Marcel Iron.

The office of the A. & P. Roberts Company has been removed from 261 South Fourth street to the northwest corner of Fifteenth and Chestnut streets.

## Cleveland.

CLEVELAND, OHIO, January 20, 1903.

**Iron Ore.**—There is further talk about prices for the ensuing year, but it is probable that no action will be taken until after the middle of February. It is understood that there is quite a general determination to make the prices higher during the coming year.

**Pig Iron.**—New strength seems to pervade the entire trade. This is especially noticeable in the foundry grades, for which the market has perhaps not been better in six weeks. The demand for spot delivery has been general during the week, coming from those who have not supplied their needs by contracts and from those who have contracts but have not been able to get enough shipments. The only relief to the consumers of this territory is the supply from the Southern furnaces. The stacks in this territory have sold up their capacity for a long time ahead and are further burdened by the necessity to make deliveries on contracts which have held over from last year. Some of the Southern furnaces are in position to make deliveries within three or four weeks and in this way they are easing up things considerably. It is evident, however, that the supply from the South has certain limitations and that it would be useless to expect all of the surplus needs of this territory for the first half of the year to be met from that supply. The situation seems to incline to the belief that, unless there is a speedy increase in the supply from new stacks, purchases abroad must be resorted to. The buying of Foundry Iron for second half has started here and everything points to a continuance of that activity which has been so conspicuous during the past few months. This week the first increase of the year in the price of Foundry Iron for spot delivery was made. Valley furnaces now have very little difficulty in getting \$24.50 to \$25 for No. 2 at the furnace. What few contracts are taken for first half delivery are on the basis of \$23, Valley furnace, for second half, \$21 at the furnace. The Bessemer furnaces are so well sold up for the first half of the year that it is a question when many of them will have their material delivered. The Basic producers are in a similar predicament, but have a little off Iron for sale now. This is selling at between \$20 and \$21 and is in good demand. Standard Iron is selling between \$21 and \$22 at the furnace. The Coke supply through this territory has been much improved lately.

**Finished Iron and Steel.**—It might be said that the whole Iron and Steel market has taken on a better tone during the past week, and the soft spots which appeared during the latter part of December and January 1 have about all disappeared. The buying has been much heavier and the inquiries larger. Interest still centers in the Bar Iron situation. Those who have Bar Iron to buy have been trying to bring that material down to the same basis as Bessemer Steel Bars, but have not succeeded in doing so. In fact, it has been sold this week on a higher basis, one transaction having been made at 1.70c., Pittsburgh, while another sale has been made at 1.75c., Pittsburgh. On a Western order one contract was taken here at 1.70c., Cleveland, from one of the local mills. The demand for Steel Bars is heavier and inquiries have indicated a good tonnage ahead. Prices hold at 1.60c., Pittsburgh, for Bessemer, and 1.70c., Pittsburgh, for Open Hearth. The demand for Rails continues. The Lake Shore Railroad purchased 1500 tons for shipment this year. The demand for Light Rails also continues. The sales of Structural Steel have been heavy. Specifications are better on old contracts, inquiries are larger on new business, the smaller mills are finding greater demand for spot shipment and some of the jobbers discover a need in excess of their contracts with the larger mills. The smaller mills are finding a good supply of orders for material at their present list of prices, 1.75c. to 1.85c. at the mill, and this is being paid freely. The jobbers are getting 2.25c., Cleveland, the larger mills, 1.60c., Pittsburgh. The demand for Plates is strong and active, but it is increasingly evident that the vast bulk of the year's business in that line has been done and that most of the demand now is for quick shipment on small lots. On these orders the smaller mills have not the slightest difficulty to obtain 2c. at the mill, either Pittsburgh or further East. The Sheet situation has not improved much. The market is firm in some gauges but is wavering in others, and there is a constant fear that the smaller mills will force a reduction. It is known that many of them are accepting contracts under the present list of prices, but so far their operations have not affected the general market. Prices generally are 3.10c. to 3.25c. for No. 27 out of stock; 2.85c. to 2.95c. for No. 27 at the mills, and 3.70c. for No. 27 Galvanized Sheets. The Billet situation has not changed except that one of the Southern mills has been on the market here looking for orders and is inclined to go below the prices which have been asked from Pittsburgh. One sale of 2000 tons of Sheet Bars was made during the week at the old price.

**Old Material.**—The market has been a waiting one for a good while. The expectation of reduced prices has been

general, but lately the collectors in the Scrap trade have demanded the old list of prices and it seems impossible to break the market. The quotations on the few sales made continue as follows: No. 1 Wrought, \$19, net; Iron Rails, \$25.50, gross; Iron Axles, \$28, net; Cast Borings, \$12, gross; Car Wheels, \$22.50, gross; Heavy Melting Steel, \$19, gross; Old Steel Rails, \$20, gross.

## Pittsburgh.

(By Telegraph.)

PARK BUILDING, January 21, 1903.

**Pig Iron.**—The Coke situation seems to be growing steadily worse instead of better. Furnaces are offering up to \$5 a ton for Coke, guaranteed shipments, but in many cases fail to get it. On one day recently the United States Steel Corporation had 11 furnaces banked for want of Coke, while at this writing 10 to 12 stacks in the two Valleys are down for the same cause. Sales of Pig Iron are relatively small, owing partly to the scarcity of metal and also because furnaces are sold up and have little or no Iron to spare. It is also true that consumers are pretty well covered for some months ahead. Bessemer Iron for shipment up to July is held at \$21 to \$21.50 at furnace, while for February and March delivery \$22 to \$22.50 is quoted. There is a good demand for Foundry Iron and Northern No. 2 for prompt delivery brings \$22.50 to \$23, at furnace, equal to \$23.35 and \$23.85, Pittsburgh. Forge Iron is \$20.50 to \$20.75, Pittsburgh, with very little doing. We note sales as follows: 3000 tons of Virginia Basic Iron at \$21, delivered Pittsburgh; 600 tons Bessemer, February and March delivery, \$22, at Valley furnace; 500 tons Gray Forge, \$20.50, Pittsburgh.

**Steel.**—The Steel market is active as regards inquiries and prices are strong; 4 x 4 inch Bessemer Billets are held at \$29.50 to \$30, and Open Hearth Billets at \$30.50 to \$31, Pittsburgh. There is some demand for Sheet Bars and we note a sale of 1500 tons of Open Hearth for next five months' delivery at \$32, Pittsburgh. Little or no foreign Steel is coming into this market now.

(By Mail.)

The serious shortage in fuel is the great detriment to the Iron trade just now, and finishing mills all over the country are running short handed, many of them not more than half time. As high as \$6 to \$7 a ton, at mine, is being paid for run of mine Coal, and many consumers cannot get it even at these prices. The congested condition of the railroads is worse than ever, and leading roads have placed embargos on freight, which are seriously retarding shipments. Pittsburgh is probably in a worse plight than any other city in the country in this respect, as the railroads are utterly unable to move with any degree of promptness the enormous tonnage of freight which the mills and work shops of this city are offering them. Coke shipments are bad, and at this writing at least a dozen furnaces in the two Valleys are banked for want of Coke. Pittsburgh must have more railroads, more cars, more motive power and more track facilities before any permanent improvement can be expected. A material improvement in demand on some lines of Finished Iron and Steel is the feature of the Iron market. Many leading consumers have completed repairs and inventory; have also closed their books for last year, and are now placing orders more freely than for some time. Pig Iron continues scarce and Bessemer commands \$21.50 to \$22, depending on deliveries wanted. Demand for Foundry Iron is good and Northern No. 2 is selling at \$22.50 to \$23, at furnace. Steel is scarce and firm, Bessemer Billets bringing close to \$30, Pittsburgh. The outlook for this year is regarded as very bright.

**Steel Rails.**—The report that the United States Steel Corporation are refusing to book orders for Rails for 1903 delivery is untrue. Their Edgar Thomson and Ohio Works are turning out over 100,000 tons of Rails per month. But it is a fact that the leading Rail mills are declining to book orders, except for late delivery this year. The mills have about 2,200,000 tons of orders on their books. No large contracts have recently been placed, and we quote at \$28, at mill, for Standard Sections.

**Rods.**—There is a fair demand, and we quote Bessemer Rods at \$54.50, at mill. Open Hearth are held at about \$1 higher.

**Spelter.**—The market on Spelter is more active than for some time, and prices have advanced sharply. We quote prime grades of Western Spelter at 4.75c. to 4.80c., Pitts-

burgh. Many consumers who refused to buy when prices were lower will now have to pay higher figures.

**Plates.**—Reports in the daily press that prices of Plates would be advanced are untrue. The mills are congested with tonnage and sold up for months ahead, but are adhering rigidly to the base price of 1.60c., Pittsburgh, for Plates ¼-inch thick and heavier, and more than 90 per cent. of the business on the books of the mills was taken at this price. On orders of a few tons of Plates for prompt shipment some mills charge 1.75c. and higher. Official prices are as follows: Tank Plate, ¼-inch thick and up to 100 inches in width, 1.60c., at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c.; Still Bottom Steel, 1.90c.; Locomotive Fire Box, not less than 2.10c., and it ranges in price to 3c. Plate more than 100 inches wide, 5c. extra per 100 lbs. Plate 3-16 inch in thickness, \$2 extra; gauges Nos. 7 and 8, \$3 extra; No. 9, \$5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots; terms net cash in 30 days.

**Structural Material.**—Premiums for early deliveries of Structural Steel have almost entirely disappeared. No large contracts have recently been placed, but a great many small orders are being received, which aggregate a large tonnage. Many large bridge and building projects are under way, and if one-half of these are placed it would mean a very large tonnage. Association prices are as follows: Beams and Channels up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6, 1.60c.; Zees, 1.60c.; Tees, 1.65c.; Steel Bars, 1.60c., half extras, at mill; Universal and Sheared Plates, 1.60c. to 1.85c.

**Muck Bar.**—We note a sale of 500 tons of domestic Muck Bar at \$33, Pittsburgh, and this can be regarded as the market price. Very little Eastern Bar has been sold in this market for some time.

**Hoops and Bands.**—New tonnage is fairly large, and the three leading mills have a good deal of work on their books. Prices are fairly strong, and we quote Cotton Ties at 95c. a bundle. Steel Hoops from Bessemer stock are 1.90c. in 250-ton lots and over, and 2c. in carloads, at mill. Bands are quoted at 1.60c. up to No. 12 gauge, with extras as per Steel Bar card. For Open Hearth stock \$2 a ton advance is charged.

**Bars.**—Nothing has yet been done by the leading Steel Bar mills with the request of large consumers that they be allowed a slightly lower price on large contracts. The mills recognize that heavy consumers are probably entitled to a little lower price than the carload buyer, but just how to make this concession without causing more or less confusion is a difficult question to handle. The Implement makers are in the market with some inquiries, but as yet are not placing contracts. Tonnage in Iron and Steel Bars is fairly large and prices are firm. We quote Iron Bars at 1.70c. in carloads and 1.80c. in small lots, half extras, as per National card. We quote Steel Bars at 1.60c., at mill. All specifications for less than 2000 lbs. of a size subject to the following differential extras: Quantities less than 2000 lbs., but not less than 1000 lbs., 0.10 per lb. extra. Quantities less than 1000 lbs., 0.30 per lb. extra, the total weight of a size to determine the extra regardless of length.

**Sheets.**—There is no improvement whatever in demand for Sheets, which is lighter than for a long time. It is reported unofficially that some of the independent Sheet mills may consolidate, but nothing official regarding this has been given out. Other of the outside Sheet mills may possibly tie up with some independent Steel plant and make an arrangement for getting a regular supply of Sheet Bars. We quote Nos. 22 and 24 Black Sheets, box annealed, one pass through cold rolls, at 2.45c.; No. 26, 2.55c.; No. 27, 2.65c., and No. 28, 2.75c. These prices are for carloads and larger lots, buyers charging the usual advances on small lots from store. On Galvanized Sheets we quote Nos. 26, 27 and 28 at 75, 10 and 2½ to 75, 10 and 5 per cent. off for carloads and larger lots. In net prices these are equal to about 3.25c. for No. 26, 3.42c. for No. 27, and 3.70c. for No. 28. These prices apply only on carloads and larger lots and are f.o.b. mill. On less than carloads jobbers charge the usual advances.

**Merchant Steel.**—No change was made in prices of Shafting at the meeting of the manufacturers held in this city last week. New tonnage being placed in Merchant Steels is light, but the mills have a good many old contracts, and specifications on these are coming in at a fairly satisfactory rate. For mill shipment we quote as follows: Tire, 1.90c. to 2c.; Spring, 2.10c. to 2.15c.; Toe Calk, 2.10c. to 2.15c., base; Sleigh Shoe, 1.90c. to 2c. Differentials are as follows: Less than 2000 lbs. of a size and not less than 1000 lbs., 10c. advance; less than 1000 lbs. of a size, 30c. advance; Cold Rolled Shafting is 47 per cent. off in carloads and 42 per cent. in less than carloads, delivered in territory east of the Mississippi and north of the Ohio rivers. Tool Steel is 6½c. to 10c. for ordinary grades and 12c. and upward for special grades.

**Boiler Tubes.**—Nothing of special interest to note, de-



mand being fair but mostly for small lots. The mills are filled up on old contracts for several months ahead. Discounts are as follows:

BOILER TUBES.		
Steel.		Per cent.
1 to 1½ inches.....	45	
2¼ to 5 inches.....	62½	
1¾ to 2¼ and 6 to 13 inches.....	52½	
Iron.		
1 to 1½ inches.....	36½	
2¼ to 5 inches.....	45½	
1¾ to 2¼ and 6 to 13 inches.....	35½	
CASING.		S. and S. Per cent.
2 to 3 inches.....	58	
3¼ to 4 inches.....	60	
4½ to 12½ inches.....	63	

**Sklp.**—The Skelp market is quiet as far as sales go, and prices are only fairly strong. We quote Grooved Iron Skelp at 1.90c.; Sheared, 1.95c. to 2c., and Grooved Steel Skelp, 1.90c., f.o.b. Pittsburgh, or 2 per cent. off for cash in 30 days.

**Merchant Pipe.**—Demand for Tubular goods is heavy, and the leading mills have all the tonnage they can take care of for the next two or three months. Prices are firm, being shaded only in exceptional cases for very desirable orders. Pittsburgh basing discounts are as follows:

		Merchant Pipe				Full weight		Full weight	
		Merchant guaranteed		Pipe, Steel Wrought		Full weight		guaranteed	
		Pipe, Steel Wrought		Iron.		Steel Pipe.		Wrought Iron.	
		Blk. Galv.	Blk. Galv.	Blk. Galv.	Blk. Galv.	Blk. Galv.	Blk. Galv.	Blk. Galv.	Blk. Galv.
1/8, 1/4 and 3/8.....		68	58	65	55	67	57	64	54
1/2.....		70	60	67	57	69	59	66	56
3/4 to 6.....		75	65	72	62	74	64	71	61
7 to 12.....		73	63	70	60	72	62	69	59

NOTE.—Orders for less than carloads will be charged at 12½ per cent. advance. Extra and Double Extra Strong cut lengths, lower random discounts by 10 per cent. net for 6 feet and longer, and 15 per cent. net for 3 to 6 feet.

**Iron and Steel Scrap.**—New business in Old Material is somewhat quiet, owing to the fact that large consumers, such as Clairton Steel Company, American Sheet Steel Company, Carbon Steel Company and others bought heavily two or three weeks ago and are now out of the market. Prices are only fairly strong and in some cases Heavy Melting Stock has been offered as low as \$21, Pittsburgh. It is said that some dealers have sold short quite a large tonnage of Melting Stock and are trying to bear the market. It is claimed that within the past two or three weeks fully 75,000 tons of Heavy Melting Stock were sold to leading consumers at \$21.50 to \$21.75, Pittsburgh. We quote Heavy Melting Stock \$21.50, but it is possible some dealers might sell at \$21; Short Steel Rails are \$21.50 to \$22 in gross tons; Cast Iron Borings are \$11.75 to \$12 gross tons; Wrought Iron Turnings are \$15 to \$15.50; No. 1 Heavy Busheling Scrap, \$18.25 to \$18.50, both in net tons; No. 1 Railroad Wrought Scrap is \$21 to \$21.50 in net tons, and No. 1 Railroad Cast Scrap is \$20.50 to \$21, gross tons; Car Wheels are \$24 to \$24.25, gross tons; Old Iron Rails, \$25.25 to \$25.50, gross tons; Re-rolling Rails are about \$23.25 to \$23.50, gross tons. We note sales, as follows: 1000 tons Steel Rails, short pieces, \$21.50; 1000 tons No. 1 Railroad Wrought Scrap, \$21, net tons; 500 tons Old Iron Rails, \$25.25, and 500 tons, \$25.50, gross tons, all f.o.b. Pittsburgh.

**Coke.**—The Coke trade continues in the position that more Coke is wanted than can be had and as a result prices for prompt delivery are high. Strictly Connellsville Foundry Coke for prompt shipment brings up to \$7 a ton at oven. Furnace Coke for prompt shipment brings up to \$5 at oven. Contracts placed some time since were on the basis of about \$4 for Furnace Coke and \$5 for Foundry Coke. The car situation seems to be worse than ever and is retarding shipments very much. Last week, out of 21,960 ovens in the Connellsville region, 21,318 were active and only 642 idle; output was 237,966 tons. Of 4419 ovens in the Connellsville region 4153 were active last week and 247 idle, the output having been 48,910 tons. Projects are under way looking to the building of a large number of Coke ovens in the Connellsville region this year and this branch of the Coke industry promises to be very active for some time to come.

E. Dreifus, Trimble & Co., Arcade Building, Philadelphia, have opened an office in Room 620, Lewis Block, Pittsburgh, and will deal in Pig Iron and Iron and Steel Scrap. Upon completion of the Farmers' Bank Building, Fifth avenue and Wood street, Pittsburgh, the office will be removed to that building.

Three test shots were fired from the big 16-inch coast defense rifle at Sandy Hook on January 17, and were declared by ordnance experts to have been successful. This is the largest gun thus far built in the United States. It was finished at the Watervliet Arsenal and was recently mounted at Sandy Hook.

## St. Louis.

CHEMICAL BUILDING, January 21, 1903.—(By Telegraph.)

**Pig Iron.**—There is no particular change in conditions governing the Pig Iron market at this point. There is some little increase in the inquiry coming to hand which seems indicative of a more lively state of affairs in the near future. Prices are unchanged, and we continue to quote, f.o.b. St. Louis, as follows:

Southern, No. 1 Foundry.....	\$24.25 to \$24.75
Southern, No. 2 Foundry.....	23.25 to 23.75
Southern, No. 3 Foundry.....	22.75 to 23.25
Southern, No. 4 Foundry.....	22.25 to 22.75
No. 1 Soft.....	24.25 to 24.75
No. 2 Soft.....	23.25 to 23.75
Gray Forge.....	22.25 to 22.75
Southern Car Wheel.....	29.00 to 30.00
Malleable Bessemer.....	25.75 to 26.25
Ohio Silvery, 8 per cent. Silicon.....	31.00 to 32.00
Ohio Strong Softeners, No. 1.....	to .....
Ohio Strong Softeners, No. 2.....	to .....

**Bars.**—Specifications in the hands of jobbers for Iron and Steel Bars are said to be on a slightly increased scale than when last reported. In the matter of prices the impression rules that a higher basis will soon be in order. We quote from the mills: Iron Bars at 1.80c. to 1.90c., and Steel Bars at 1.80c. to 1.85c. Jobbers quote Iron Bars at 2.25c. and Steel Bars at 2.25c. in small lots from store, with 2.15c. in large quantities.

**Rails and Track Supplies.**—The generally heavy and strong condition of business in this department is still prevailing. We quote as follows: Splice Bars at 2.05c.; Bolts, with Hexagon Nuts, 3.15c. to 3.35c.; with Square Nuts, 3c. to 3.10c.; Spikes, 2.25c. to 2.50c.

**Angles and Channels.**—It is said that some improvement in trade coming to the hands of the jobbers is to be noted. For material of this class 2.50c., base, is asked.

**Pig Lead.**—The demand and inquiry in the Pig Lead market continues steady, but any marked increase does not show. We quote Chemical at 3.95½c. and Desilverized at 3.97½c.

**Spelter.**—A slow but steady improvement has been felt in the market for Spelter. Transactions have been on a moderately large basis; prices have shown a hardening tendency, and 4.80c. to 4.85c. is generally asked.

## Birmingham.

BIRMINGHAM, ALA., January 19, 1903.

If one cannot say there has been an added strength to the Iron market since our last report he can at least say that it has been very firm, and that in the majority of the transactions outside quotations have prevailed. There is every indication of a hardening of the market. In some cases there have been actual advances asked which have been met with acceptance from buyers with little apparent reluctance. The inquiries have increased very materially, and their scope is constantly widening. The actual transactions are not in proportion to them. If they were, we should soon be bare of Iron. If the sellers of Iron were pressing offerings the anticipated output would soon be absorbed. This could be the case without a large business resulting because of that already registered. It is not intended to convey the idea that there is a rushing business going on, but that there is a good business, satisfactory in volume and in price, too. The buyers are taking the initiative and, as a rule, absorbing what offerings are drawn out. One buyer declines acceptance and steps aside and makes room for another, who takes what he rejected. Some of the large interests, heretofore mentioned as holding out, are again on the anxious seat if inquiries are any criterion as to wants. But as a rule their takings are of a very meager character. The smaller buyers are taking their rejections and their sum total is absorbing supplies as they are offered. Quotations are again becoming ragged, as the sales herewith given testify. There were sales of No. 2 Foundry at \$20 for cash and quick shipment, and there were also sales at the same price for delivery extending over the first half of the year, and some for delivery extending over the first four months. For that grade \$20 is the ruling rate. No one here will confess any knowledge of sales at \$19 as is reported. For the last half of the year \$18.50 is given as the minimum rate for No. 2 Foundry, but sales are reported at \$19 and, though limited in volume, \$19.50 has been obtained. These outside sales in volume are materially less than those at \$18.50 and \$19. No. 3 Foundry is quoted as high as \$19.50 by some holders, and as low as \$19 by others, for cash and quick shipment. The same figures are adhered to by others for convenient deliveries during the first half of the year. This grade is probably scarcer in proportion than any other popular grade, and in quotations is more erratic. There were sales at \$19.50 for quick shipment, and there were sales also at the same price, with a little more extended time as to shipments. But the price obtained for No. 4 Foundry is "an eye opener." That grade was sold at \$19.25 for quick shipment, and two lots of 500 tons

each were sold at the same price on deliveries a little more favorable to the seller. These prices represent the pressing needs of some buyers and the indifference to sales of some sellers at other than inducing offers. The quotation for this grade is \$18. When you come to Gray Forge quotations are nearer uniform than any other grade. All the sellers quote it at \$17.50, with a majority of them reporting offers at \$17 declined. It is scarce, and it is anticipated that an acute demand for it is almost in sight. When it materializes its scarcity will be keenly realized. There was one sale reported at \$18 for quick shipment; and one large local buyer informed your correspondent that he could not draw an offering at less than \$17.75. Away from home very much lower quotations as to this grade prevail. There was a sale of No. 2 Soft at figures that look low, but it was under circumstances that did not affect the other grades. As to what delivery is mostly in demand the answer is, for the first half of the year. That for the last half has not yet reached the stage of activity, but it is gradually growing. It looks now as if none of the furnaces will carry any surplus over to that period.

Shipments of belated business men are increasing in volume as the supply of cars permits, but normal conditions in this respect are not yet prevailing, and there is a goodly lot of Iron on the yards awaiting cars to load. Some time ago these letters mentioned the fact that the Tennessee Company would, when ready for the change, erect an additional furnace at Ensley of greater capacity than any they possessed, and that the entire plant there would be rehabilitated. Preparations are now being made for the erection of the large furnace, and when it is ready for operations it will simply take the place of the one to be rehabilitated and so on until the entire battery is modernized. There will probably be no increase as to the number of furnaces in commission, but there will be an increase in their capacity. The new furnace will have a maximum capacity of 350 tons, and be modern in every sense of the word. It will be 85 feet high, with a bosh of 20 feet and a 13-foot hearth. There is some talk yet of other new furnaces to be erected, but so far your correspondent can obtain no tangible information concerning them. The large new furnace of the Central Coal & Iron Company at Tuscaloosa is practically completed, and will in a very little while be in commission. The same company are contemplating another furnace at the same point. Both of them are to be of large capacity. With an increase in furnace capacity must come increased facilities for supplying material to keep them going. As it is now some of them are put to it to keep going, and the furnace bins are often mighty lean in furnace stock. There has been and is yet some trouble with some of the furnaces, but not of a character that is very serious. It is of only a temporary nature, but it diminishes the production while it lasts. The utmost care is being taken to avoid all mishaps; but with all the precautions observed a loose screw will now and then bob up in sight and cause a halt in operations.

The report of the Car Service Association shows that for the month of December 56,308 cars were handled, as against 41,820 for that month in 1901, and for the year 615,937, as against 497,769 the preceding year, a difference of 118,168 cars.

Coke is just as worrying a factor in Iron making as has been heretofore represented. Those who have to depend on other makers for supply, even of but a part of their requirements, are kept busy to keep in stock, and they are never off the anxious seat concerning it. It is quoted as easily salable at \$6.50 for spot and nearby delivery and at \$5.25 to \$5.50 for the year.

Coal has undergone no change since last report. There is a fine demand for it at prices entirely satisfactory to sellers who cannot entertain all the offers made to them for business. The most prominent among the operators are very optimistic as to the outlook for the entire year for continued good business.

## New York.

NEW YORK, January 21, 1903.

**Pig Iron.**—There is little new business doing. Consumers are taking shipments promptly, so that evidently melting is proceeding at a satisfactory rate. The Southern furnace interests are naming \$17.50 for Gray Forge and \$18.50 for No. 2 Foundry, Birmingham, for extended delivery. Foreign Irons continue to sell at considerably below the equivalent of American brands. Thus Scotch No. 1 is offered at \$21.50, while Middlesbrough No. 3 is offered at \$18. With the exception of one cargo of Middlesbrough Pig, involving upward of 3000 tons, no purchases of any consequence have been made abroad by importers. We quote for prompt to early delivery: No. 1 X Foundry, \$24 to \$24.50; No. 2 X Foundry, \$22.25 to \$22.60; No. 2 Plain, \$21.50 to \$22. Tennessee and Alabama brands, in New York and vicinity, No. 1 Foundry, \$24 to \$24.50; No. 2 Foundry, \$22.75 to \$23.25; No. 3 Foundry, \$21.75 to \$22.25.

**Steel Rails.**—Since the placing of the order for 10,000 tons for the New York Central Railroad the only large contract closed has been for the Clark San Pedro road for a like amount. We understand that the total shipments of the Rail mills, exclusive of the Colorado Works, during 1902, of Standard Rails of 50 lbs. per yard and over, were 2,335,000 gross tons. Production this year is likely to be greater, since the Colorado Works have been remodeled and the new Buffalo plant of the Lackawanna Steel Company will run during a considerable part of the year.

**Cast Iron Pipe.**—The excellent conditions previously reported are maintained. Inquiries are very numerous from municipalities and corporations and the business now being placed is running far in excess of any previous experience in January. The letting of the 5000-ton contract expected to be placed last week by the Consolidated Gas Company was deferred until Tuesday of this week, and it is understood that the United States Cast Iron Pipe & Foundry Company were the successful bidders. Prices show no material change, ruling at about \$34, gross ton, for 6 to 12 inch, tidewater.

**Finished Iron and Steel.**—The American Bridge Company secured several excellent contracts during the week, among them being a viaduct for the Pennsylvania Railroad Company at Philadelphia, 9500 tons; a bridge for the Missouri Pacific Railroad Company, 4500 tons, and buildings for the Ingersoll-Sergeant Drill Company, Phillipsburg, N. J., 2500 tons. A great deal of bridge and building work is under negotiation, with every prospect that a great deal of tonnage will shortly be closed. The large Plate orders which have been expected in this vicinity are now beginning to come out. Western mills are showing more disposition to bid for Eastern Plate work, the difference between Eastern and Pittsburgh prices being evidently inviting to the Western mills. The Eastern Bar mills will hold a meeting in this city to-morrow. Reports from the mills represent a decidedly easier condition as to fuel supply and it is hoped that trouble from this cause has ended permanently. We quote at tidewater as follows: Beams, Channels and Zees, 1.75c. to 2c.; Angles, 1.75c. to 2c.; Tees, 1.80c. to 2c.; Bulb Angles and Deck Beams, 1.90c. to 2.25c. Sheared Steel Plates are 2.10c. for Tank, 2.20c. for Flange, 2.35c. to 2.40c. for Fire Box. Refined Bars are 1.95c. to 2c.; Soft Steel Bars, 1.80c. to 1.90c.

**Old Material.**—Conditions are perplexing. Mills are making inquiries, evidently being in need of stock, but are bidding under what dealers consider the market. They will only buy small lots and will not anticipate their wants to any extent. On the other hand, holders of Scrap think it worth more money instead of less, refusing to duplicate recent business. The market is therefore characterized as a waiting market. Inquiries have been sent abroad for Iron Rails, but the best that can be done is said to be \$23.50, which is above buyers' views. Cast Scrap is moving a little better than Wrought, but is much less active than in December. We quote, f.o.b. cars, vicinity of New York, per gross ton:

Old Iron Rails.....	\$22.50 to \$23.00
Old Steel Rails, long lengths.....	20.50 to 21.00
Old Steel Rails, short pieces.....	18.75 to 19.25
Relaying Rails, heavy sections.....	29.00 to 30.00
Relaying Rails, lighter sections.....	32.00 to 33.00
Old Car Wheels.....	20.75 to 21.25
Old Iron Axles.....	28.00 to 29.00
Old Steel Car Axles.....	24.50 to 25.00
Heavy Melting Steel Scrap.....	18.75 to 19.25
No. 1 Railroad Wrought Scrap Iron.....	20.00 to 21.00
Track Scrap.....	18.00 to 18.50
Wrought Pipe.....	14.00 to 15.00
Ordinary Light Iron.....	11.00 to 12.00
No. 1 Machinery Cast Scrap.....	19.00 to 20.00
Stove Plate.....	14.00 to 15.00
Wrought Turnings, delivered at mill.....	16.50 to 17.00
Cast Borings, delivered at mill.....	10.00 to 10.50

## The New York Machinery Market.

NEW YORK, January 21, 1903.

From all quarters of the trade come reports of increased activity. Business is better and there is a more cheerful tone in the machinery district than for many weeks past. The year has started in somewhat more actively than did the last, and consequently business is considerably better than it has been for months. A good number of very large projects, requiring equipment of all sorts, are about to be closed and numberless smaller propositions are coming up on all sides. Throughout the last week orders have been numerous. Values are firm and unchanged.

In our last issue mention was made of a \$300,000 machine tool transaction about to be closed. We learn that it is the American Locomotive & Machine Company of Montreal who are to purchase these tools. The matter is now up and a representative of each of the big machinery houses in this section is now "camping out" in Montreal. The list includes every type of tool required in a thoroughly modern locomotive shop. The new shop is to be built in Canada, and we understand that a number of influential financiers are backing the project.



The International Steam Pump Company have placed additional orders for machine tools for their Snow shops. The Niles-Bement-Pond Company obtained contracts covering about \$100,000 worth of tools. This covers practically all of the heavy tools specified. Bids are now being received by the International Company for about \$50,000 worth of heavy machine tools to be installed in the Laidlaw-Dunn-Gordon shops at Cincinnati. These tools will be for filling out the equipment along the lines originally intended when the new Cincinnati shops were laid out.

The Emerson Steam Pump Company, a new corporation with capital stock of \$1,000,000, have acquired the Emerson Pump Company of Alexandria, Va., together with all the patents recently granted to W. R. Emerson on foot valves, screens for suction pipes, &c. The new company have purchased six acres of land at Alexandria, Va., where they intend erecting large shops for the production of steam pumps and accessories. Besides the machine shops there will be a large iron and brass foundry. Plans for the new plant are now being prepared. It is intended to install most modern equipment throughout. W. R. Emerson, president of the company, has offices at 1331 T street, N. W., Washington, D. C.

We can state officially that the directors of the Stanley Electric Mfg. Company at a meeting held on January 10 passed a resolution providing that the capital stock of the company be increased from \$3,000,000 to \$10,000,000, and that the stockholders will meet on February 11 to approve this action of the board. As you will probably surmise plans for this great increase of facilities have been under way for some time to the end of placing the company on a basis to compete favorably with either of the two great electrical manufacturers, the General Electric and the Westinghouse companies. Rumors have also been current ever since the acquirement by Wm. C. Whitney and his associates of an interest in Stanley stock to the effect that negotiations are under way for the sale of control of the company to the General Electric Company. The authoritative statement is now made that these rumors have been founded on nothing more than a misunderstanding of what really was taking place. It will be remembered that the Stanley Company recently secured an order from the New York Edison Company aggregating over \$500,000 for dynamos and other electrical apparatus, some of which is to be the largest of its kind ever constructed. This indication of their invading the field of heavy work is now amply verified. Moreover, funds will be provided by this increase of capital for certain important developments which the engineers of the company have been planning for some time. Among these developments is a new system of operating for heavy long distance electric railways, which possesses marked advantage over systems previously experimented with.

The Common Council of Buffalo, N. Y., has given Col. Francis G. Ward, the Commissioner of Public Works, authority to prepare plans and specifications and advertise for bids for ten 250 horse-power boilers, together with mechanical stokers and coal and ash handling apparatus. They are at work now on the plans, and expect to be ready to advertise for bids on or about February 1. James B. Cloudsley, Chief Engineer of the Pumping Station, is in touch with the work.

The Herendeen Mfg. Company of Geneva, N. Y., have assumed the management of the Abendroth & Root Mfg. Company's plant at Newburgh-on-the-Hudson. The Newburgh concern was one of the oldest of its kind in the United States, having been established about 35 years. A force of from 250 to 300 men are employed. The concern manufacture the Root water tube high pressure boiler and spiral riveted pipe. The latter is used in water works and hydraulic work, elevators, paper mills, &c. The concern is capitalized at \$250,000. The Geneva and Newburgh shops will be run as separate corporations. Mr. Herendeen refused to state what would be the ultimate result of the firm's new undertaking. Whether the Herendeen shops will remove from Geneva is a question that the members of the company will not discuss. The Newburgh concern have been located at that place only a little more than a year. The shops were located formerly in Brooklyn, where they were destroyed by fire. Largely through the influence of Governor Odell the citizens of Newburgh raised a bonus of \$25,000 and furnished the company a site just outside the city limits. A large part of this bonus is said to have been contributed by the Governor himself.

The Camden & Trenton Railway Company, Riverside, N. J., who control the Cinnaminson Electric Light, Power & Heating Company and Bordentown Electric Light, Power & Motor Company intend enlarging their power station at Bordentown and installing one direct connected 250 kw. generator and one 500 horse-power boiler and condensing machinery for the entire plant.

The Landis Tool Company of Waynesboro, Pa., are receiving bids for a new machine shop, to be 100 x 50 feet, and an addition to their foundry, to be 64 x 80 feet. A list of machine tools to be installed in the new shop is now being prepared. The buildings will be of structural steel and brick to carry out the design of the present buildings.

The Pedrick & Ayer Company, who for a great many years have been located at Philadelphia, Pa., have removed to Plainfield, N. J., and are now occupying their new works, which they have just completed. The main building is 400 feet long and 100 feet wide, with independent power house, blacksmith shop, pattern shop and pattern storage. This new shop has been equipped with electric traveling cranes and modern tools, so as to enable the company to meet the largely increased demand for the standard goods which they make, and for which they have made such a reputation, consisting of air compressors, air hoists, pneumatic riveters and special railroad tools. Their selling office is still at 85-87-89 Liberty street, New York City.

## Boston Machinery Market.

BOSTON, MASS., January 17, 1903.

Dealers in machinery and machine tools report that business conditions are practically the same as they were a fortnight ago.

The Walworth Mfg. Company are so crowded with orders that some of their clerical force have been obliged to work nights and Sunday to keep up with business. The company have recently filled some large foreign orders, including one for Japan.

The following new corporations have filed their certificates of organization with the Massachusetts Secretary of State: Boston Clutch Company, with a capital of \$25,000, the president being Clinton E. Achorn and the treasurer William R. May; William A. Hardy & Sons Company of Fitchburg, Mass., with a capital of \$50,000, to manufacture and deal in machinery, &c., with William A. Hardy, president, and Frank O. Hardy, treasurer; Union Screen Plate Company of Fitchburg, Mass., with Adams Crocker as president and Emmons Crocker as treasurer, and a capital of \$15,000, to make and deal in machinery and supplies for paper and pulp mills; the New Can Company of Boston, with Charles Marzynski as president, Morris Marzynski as treasurer and a capital of \$15,000, to make cans and to devise and make machinery, tools, &c., for making cans or metal wares; Massachusetts Dry Dock Company, with Malcolm H. McGann as president, George P. Bingham as treasurer, and a capital of \$300,000, to build and repair ships, engines, &c.; Milford Iron Foundry of Milford, Mass., with Charles N. Welch, president and treasurer, and a capital of \$30,000; Albert Russell & Sons Company of Newburyport, Mass., with William F. Runnells, president and treasurer, and a capital of \$30,000, to run a foundry and machine shop and to install and care for plumbing and heating apparatus. The par value of the stock of the New Can Company is \$50 per share; that of the other companies is \$100 per share.

The selectmen of Essex, Mass., have decided to build a steel bridge in place of the wooden one in that town.

Norcross Brothers of Boston have obtained the contract to build Machine Shop No. 2 at the Charlestown Navy Yard. The shop will be used by the steam engineering department. It will be two stories high, constructed of brick with steel frame and will measure 105 x 206 feet. The bidders were Norcross Brothers, \$101,500; L. L. Leach & Son of Chicago, \$102,000; Dodge Construction Company of Boston, \$103,000, and Pennsylvania Bridge Company of Beaver Falls, Pa., \$108,000.

George Lawley & Son, boat builders, have purchased the House of Correction property adjoining their shipyard at City Point, South Boston. They will build a complete yachting plant, a floating dock for large craft and a coal pocket.

George C. Vaughn has resigned the presidency of the Vaughn Machine Company of Peabody, Mass., and Hamilton Stewart Corwin, late comptroller of accounts of the American Woolen Company, has been chosen as his successor.

Woodbury & Leighton have obtained the contract for constructing a portion of the East Boston Tunnel at the head of State street, Boston, and altering the basement of the old State House into a station. Nine bids were received, Woodbury & Leighton's (\$39,102) being the lowest. The highest bid was \$103,000. The Rapid Transit Commissioners have advertised for bids for completing section C of the tunnel—under State street, near Atlantic avenue—the bids to be opened January 20.

The annual meeting of the members of the Mahoning and Shenango Valley Bessemer Association was held last week, and it was decided to continue the organization for 1903, and the former officials were re-elected. J. G. Butler, Jr., of Youngstown, is chairman. This association embraces about 17 independent blast furnace stacks in the Mahoning and Shenango valleys.

The House Committee on Naval Affairs at Washington, D. C., have adopted the provision made in the Naval Appropriation bill prepared by a subcommittee authorizing the construction of three large battle ships and one cruiser.

## Metal Market.

NEW YORK, January 21, 1903.

**Pig Tin.**—Early in the week under review prices continued to advance, reaching 28½c. here on Monday last. There has been a considerable decline since then, prices closing to-day as follows: Spot, 28c. to 28¼c.; January, 28.10c. to 28.20c.; February, 28¼c. to 28½c.; March, April and May, 28.15c. to 28.25c. Business was fair, but it was almost entirely in future deliveries. There were few transactions in spot, the volume in each case being small. There is a large stock here at present, and demand from the interior has been very low. The London market also reached its highest point on Monday, when £129 12s. 6d. was reached. The fluctuations since then have also netted a decline at the close to-day, the price being £128 5s. for both spot and futures. It is interesting to note in this connection that the premium on futures, which were so high a few weeks ago, has been entirely wiped out. Arrivals thus far this month aggregate 2125 tons, while it is estimated that 2630 tons are afloat. On Thursday, the 29th inst., the regular Banca sale will be held in Rotterdam. It is said that about 2400 tons will be disposed of. The opinion expressed most frequently in the trade is that the market is approaching more normal conditions. It is held that statistically there is absolutely nothing to warrant the present speculation in futures, as supplies on the first of this year were about the same as at the corresponding period of last year.

**Copper.**—The market showed no great increase in activity and prices slowly sagged off. From sources traced to the stock market glowing reports of a tremendous Copper business and particularly large sales to the consumers in the Naugatuck Valley were circulated. These had no effect on actual trade, as will be noted from the easing off of values. Reports of large sales to the Valley consumers, even when thought to be authentic, do not create much of a stir in the trade nowadays, as it is known that these sales carry with them a guarantee clause protecting the purchaser against any decline in price. Therefore little attention is paid in the trade to the report. Prices quoted to-day are as follows: Lake, 12.15c. to 12.30c.; Electrolytic, 12.05c. to 12.25c.; Casting, 12c. to 12.12½c., and Standard, 11½c. The London market is lower and easier, quoting £52 13s. 9d. for spot, and £53 for futures. Best Selected is £58 5s.

**Pig Lead.**—The first definite step toward effecting the merger in the Lead consuming interests was taken yesterday when the United Lead Company secured a charter of incorporation in the State of New Jersey. Details regarding the actual organization of the company are still being withheld by all of the interested parties, and any reference to the constituent companies would still be a matter of conjecture. It is expected, however, that within the next week matters will have progressed sufficiently to warrant an official announcement. The Lead market here is absolutely without change and interest. The official price is still based on 4.12½c. for spot Desilverized and 4.10c. for futures. The London market has advanced to £11 11s. 3d.

**Spelter.**—The market is a little easier as to price, but otherwise is unchanged. Quotations here are 4.90c. to 4.95c. for spot to March. St. Louis quotes 4.80c., with sales at that figure, and London has advanced 2 shillings and 6 pence to £20 2s. 6d.

**Antimony.**—Is unchanged. Cookson's is quoted at 8¼c. to 8½c., Hallett's at 7c. to 7¼c. and other brands at 6½c. to 6¾c.

**Nickel.**—No change is noted. Large quantities down to ton lots are now quoted at 40c. to 47c. per lb., according to size and terms of order. Smaller lots are quoted as high as 60c., according to quantity.

**Quicksilver.**—The market is quiet and unchanged here, the ruling quotations being \$48 per flask of 76½ lbs. each in lots of 50 flasks or more. London has declined to £8 12s. 6d.

**Tin Plate.**—Quotations are unchanged, being based on present official prices of \$3.60 per box of 14 x 20 100-lb. Cokes, f.o.b. mill, and \$3.79, New York delivery. These prices, it is understood in the trade, will hold until April. The Swansea market advanced 3 pence, is quoted 12 shillings.

John Stanton reports the Copper production in the United States and of the foreign reporting mines and United States exports as follows, in gross tons of 2240 lbs.:

	Reporting mines.	Outside sources.	Total product.	U. S. foreign exports.	U. S. exports.
First half 1895.....	70,612	9,100	79,712	42,484	34,275
Second half 1895.....	84,885	6,600	91,485	43,674	30,507
Total 1895.....	155,497	15,700	171,197	86,178	64,722
First half 1896.....	94,180	7,200	101,380	42,255	58,216
Second half 1896.....	95,314	7,200	102,514	43,941	67,287
Total 1896.....	189,494	14,400	203,894	86,196	125,503
First half 1897.....	103,651	5,000	108,651	44,263	64,870
Second half 1897.....	100,555	6,900	107,455	44,007	64,340
Total 1897.....	204,206	11,900	216,106	88,270	129,210
First half 1898.....	112,687	7,800	120,487	40,880	68,284
Second half 1898.....	103,535	10,250	113,785	43,674	76,831
Total 1898.....	216,222	18,050	234,272	84,554	145,115
First half 1899.....	111,987	12,500	124,487	43,629	56,460
Second half 1899.....	118,818	18,900	137,719	45,611	63,351

Total 1899.....	230,806	31,400	262,206	89,240	119,811
First half 1900.....	114,177	20,400	134,577	43,153	90,747
Second half 1900.....	113,810	20,400	134,104	46,278	63,335
Total 1900.....	227,987	40,800	268,681	89,431	160,082
First half 1901.....	112,794	20,600	133,394	46,847	50,027
Second half 1901.....	110,561	21,300	131,861	53,394	44,339
Total 1901.....	223,355	41,900	265,255	100,241	94,366
First half 1902.....	117,748	22,700	140,448	52,546	97,060
July, 1902.....	22,749	4,000	26,749	9,210	11,733
August, 1902.....	23,196	*2,100	25,296	9,504	12,429
September, 1902.....	23,688	2,100	25,788	9,155	13,183
October, 1902.....	24,152	2,100	26,252	9,707	12,515
November, 1902.....	22,997	2,300	25,297	9,077	10,915
December, 1902.....	23,526	2,300	25,826	9,676	10,032

\* The decrease in "Outside Sources" this month and following is caused by the largest of them becoming "Reporting Mines."

**New Freight Rates on Southern Pig Iron.**—The Louisville & Nashville Railroad Company have issued under date of January 10 a new freight sheet on pig iron, the changes to become effective January 22. The following is the new rate from Southern furnaces to specified points in New York, New Jersey, Pennsylvania, Delaware and Maryland:

To—	A.	B.	C.	D.	E.	F.
Bridgeton, N. J.....	\$5.83	\$5.93	\$5.18	\$5.68	\$5.68	\$5.68
Burlington, N. J.....	5.57	5.67	4.82	5.32	5.32	5.32
Camden, N. J.....	5.52	5.62	4.77	5.27	5.27	5.27
Chester, Pa.....	5.32	5.42	4.57	5.07	5.07	5.07
Jersey City, N. J.....	5.67	5.77	4.92	5.42	5.42	5.42
Kensington, Pa.....	5.32	5.42	4.57	5.07	5.07	5.07
Lamokin, Pa.....	5.32	5.42	4.57	5.07	5.07	5.07
Linwood, Pa.....	5.32	5.42	4.57	5.07	5.07	5.07
Millville, N. J.....	5.83	5.93	5.18	5.68	5.68	5.68
Newark, Del.....	5.32	5.42	4.57	5.07	5.07	5.07
New York N. Y.....	6.28	6.38	5.53	6.03	6.03	6.03
Philadelphia, Pa.....	5.32	5.42	4.57	5.07	5.07	5.07
Rising Sun, Md.....	5.32	5.42	4.57	5.07	5.07	5.07
Rowlandville, Md.....	5.32	5.42	4.57	5.07	5.07	5.07
St. Clair, Pa.....	5.37	5.47	4.62	5.12	5.12	5.12
Salem, N. J.....	5.83	5.93	5.18	5.68	5.68	5.68
Shackamaxon, Pa.....	5.32	5.42	4.57	5.07	5.07	5.07
Sheridan, Pa.....	5.32	5.42	4.57	5.07	5.07	5.07
Tacony, Pa.....	5.32	5.42	4.57	5.07	5.07	5.07
Thurlow, Pa.....	5.32	5.42	4.57	5.07	5.07	5.07
Trenton, N. J.....	5.57	5.67	4.82	5.32	5.32	5.32
Wilmington, Del.....	5.32	5.42	4.57	5.07	5.07	5.07
Woodbury, N. J.....	5.67	5.77	4.92	5.42	5.42	5.42

A. From Birmingham, Ala., and points in that locality.  
B. From Sheffield, Florence, Decatur, Ala.; Rockdale and Napier, Tenn.  
C. From Big Stone Gap, Va.  
D. From Middlesboro, Ky.  
E. From Chattanooga, Tenn.  
F. From South Pittsburgh, Tenn.

Robert P. Linderman, long prominent in the steel trade through his connection with the Bethlehem Steel Company, died at South Bethlehem, Pa., on Wednesday, January 21, from blood poisoning, caused by a scratch on one of his hands.

It is stated that a journey around the world in the course of the next year may be accomplished in 40 days. When the rails of the Siberian line are all laid it will be possible on the first through trains to go from Moscow to Irkutsk in six days, and from Irkutsk to Vladivostok or Port Arthur in three days. The time table around the world from Paris will then be: Paris to Vladivostok, 13 days; to Nagasaki, two days; to Yokohama, two days; to San Francisco, 12 days; to New York, four days; to Cherbourg, six days, and to Paris in less than half a day.

The Ohio Works of the National Steel Company, at Youngstown, Ohio, were closed down on Saturday, January 17, for repairs. The three blast furnaces of the National Steel Company at Youngstown and the one at Niles have been banked, and the coke which would have gone to these stacks is being sent to other furnaces of the United States Steel Corporation. The repairs to be made at the Ohio Works are of a general nature, and will require from ten days to two weeks to complete.

Robert Poole, president of Robert Poole & Son Company, manufacturers of heavy machinery, Baltimore, Md., died on January 15 at his home at Woodberry, near Baltimore, aged 75 years. Among the larger engineering feats accomplished by the company of which Mr. Poole was head was the erection of the dome of the National Capitol at Washington, for which Mr. Poole drew the plans, and the construction of the heavy iron castings and columns for the Treasury Building. During the Civil War the company manufactured considerable ordnance for the Federal Government.



## PERSONAL.

E. K. Orr, Western representative of the Shelby Steel Tube Company, has resigned to accept a position with Joseph T. Ryerson & Son, Chicago.

W. S. Chase, formerly treasurer of the Cleveland Machine Screw Company, is now connected with the National-Acme Mfg. Company, Cleveland, Ohio, in the capacity of sales manager. In his former position Mr. Chase formed a wide acquaintance with the automatic screw machine trade of the country.

C. A. Reading has been appointed superintendent of the Indianapolis, Ind., plant of the American Car & Foundry Company, *vice* John E. Cox, resigned.

P. McManus of Sharon, Pa., has resigned the superintendency of the plants of the American Steel Castings Company.

Chas. G. Tatnall, assistant superintendent of the Lukens Iron & Steel Company, has resigned to accept a similar position with the Carnegie Steel Company. The position will be filled by Arthur Yearsley of Coatesville.

Because of the duties devolving upon him as vice-president, T. C. Search has resigned the office of treasurer of the Consolidated Lake Superior Company and subsidiary corporations, and J. Parke Hood, formerly treasurer of the Choctaw, Oklahoma & Gulf Railroad, was elected to succeed him as treasurer of all the companies. T. Dewitt Cuyler, recently elected director of the Consolidated Lake Superior Company, has resigned, and Gordon Abbott, president of the Old Colony Trust Company of Boston, was elected to succeed him.

Alexis W. Thompson, president of the Republic Iron & Steel Company, has been elected a director of the First National Bank of New Castle, Pa.

Harry S. Black has resigned the presidency of the George A. Fuller Construction Company, one of the constituent corporations of the United States Realty & Construction Company. He will continue to act as chairman of the Board of Directors of the last named corporation.

P. H. Griffin, president of the New York Car & Wheel Works of Buffalo, N. Y., expects to sail for Europe at an early date.

J. M. Stoner, formerly purchasing agent of the Sharon Steel Company, at Sharon, Pa., has resigned, and has accepted a position with a trust company recently organized in Pittsburgh.

J. S. Seaman of the Seaman, Sleeth Company, roll manufacturers, at Pittsburgh, has been elected vice-president of the Pennsylvania National Bank in that city.

W. L. Abbott, formerly of the Carnegie Steel Company of Pittsburgh, has been elected president of the Iron City Trust Company of that city. He is also a director in the National Bank of Commerce and of the National Bank of Western Pennsylvania, chairman of the Board of the National Union of Insurance Company of Pittsburgh, and a large stockholder in the United Engineering & Foundry Company of that city.

A series of interesting events in connection with the formal inauguration of Alexander C. Humphreys as president of the Stevens Institute of Technology will take place on February 4 and 5. On the evening of February 4 there will be held in the Carnegie Laboratory of Engineering a reception given by the Alumni to President Humphreys. This will take the place of the usual midwinter meeting of the Alumni Association. On Thursday, February 5, at 2 o'clock, the inauguration ceremonies will be held in the Carnegie Laboratory. At 7 p.m. there will be a reception and dinner, tendered by the Alumni, at Sherry's, New York City. Many distinguished guests are expected to be present at this dinner of the Alumni.

George Westinghouse of the Westinghouse interests at Pittsburgh, who has been in England for some months, has sailed for this country.

**British Iron Ore Imports.**—The total imports of iron ore into Great Britain in 1902 amounted to 6,440,347

tons, against 5,548,888 tons in the previous year. The increase in 1902 was 891,459 tons, equal to a production of approximately 446,000 tons of pig iron. The proportions of the total imported from Spain were 5,310,343 tons in 1902, and 4,749,933 tons in 1901, showing an increase of 560,410 tons, so that Spain still remains the source of British foreign ore supplies to the extent of 82 per cent. of the whole.

## Proposed Metal Ceiling Combination.

A meeting was held on Wednesday, January 14, at the offices of the Knickerbocker Trust Company, 66 Broadway, New York, to arrange the preliminaries for a projected combination of the plants throughout the country manufacturing metal tile, steel ceilings and other kindred products. It is understood that the Standard National Tile Company, recently incorporated in the State of Delaware, with a nominal capital of \$1,000,000, will form the basis of the new organization, of which the capital stock will probably be \$10,000,000. Work on the formation of this combination has been going on for some time past, and it is stated that plants situated in New York, Brooklyn, Philadelphia, Chicago, Columbus, Canton, Cleveland and St. Paul will be included in the consolidation. Among the plans contemplated by the promoters of the new concern are the eventual inclusion of other lines of sheet metal manufacture, such as corrugated iron roofing and siding, steel lathing, steel brick, &c. It is said that one large factory will probably be established in a central location, with smaller ones in the large cities, the business headquarters of the organization being located in New York City. The export business will receive special attention. A call has been sent out to manufacturers of metal ceilings and metal tiles for a meeting at the Hotel Anderson, Pittsburgh, on Monday next. Lee McCullum of the New York Metal Ceiling Company is named as the probable president of the combination.

**Some Edgar Thomson Furnace Records.**—Some excellent records for output of pig iron have recently been made at the Edgar Thomson furnaces of the Carnegie Steel Company, at Bessemer, Pa. On one day recently furnace D turned out 705 tons. This is a most creditable record, in view of the fact that this stack is a comparatively small one, having been built 23 years ago, and was the fourth put in blast by Carnegie Brothers & Co., Limited, under the management of the late William R. Jones. The furnace has never been enlarged, but some modern improvements have been made, including an automatic skip. Furnace K, the last to be put in blast at the Edgar Thomson plant, December 5, 1902, has also made a record for itself. In one day recently this stack turned out 500 tons. This furnace was built complete in just 221 days, all the work and material having been furnished by the Carnegie Steel Company, with the exception of the blowing engines. Furnace J, companion stack to K, is nearly completed, and it is expected will be blown in early in February. This furnace has also been built in remarkably short time, and probably would have been completed now had it not been for delay in getting material, and also on account of the extremely cold weather which interfered with progress of the work.

**Follansbee Brothers Company.**—The report that Follansbee Brothers Company of Pittsburgh, who are building a four-mill sheet and four-mill tin plate plant at Mahan Station, near Wheeling, W. Va., had abandoned work on the plant is entirely without foundation. The facts are that work on this plant progressed very fast for some time, but recently there has been more or less delay in getting certain machinery, and for this reason work on portions of the plant is being held back until this equipment can be delivered. The main building is about under roof, and part of the equipment is on the ground. Work on this plant will be pushed just as fast as possible, and it is expected to have it completed within the next 90 days. The Fort Pitt Bridge Company have the contract for the buildings, and, as stated above, work on these is well under way.

### The British Westinghouse Electric & Mfg. Company.

The directors of the British Westinghouse Electric & Mfg. Company, Limited, of London, England, have recently issued their third annual report, showing a material increase in the growth of the company's business and indicating an industrial reawakening in England. Heretofore orders have been executed at Pittsburgh, Pa., but now that the company's works at Trafford Park, Manchester, England, are practically completed and about 3000 men employed, manufacturing operations have begun and all orders will hereafter be executed there.

A construction department has been organized to carry out building and general construction work, thus enabling the company to undertake the complete installation of large railway, power and lighting plants. This department will be under the management of James C. Stewart of the well-known engineering firm of James C. Stewart & Co., whose record brick laying performance in connection with the Manchester works caused so much discussion. Many important contracts have been obtained by the British Westinghouse Company during the past year, including those with the Metropolitan District Railway Company, the Metropolitan Railway Company, the Clyde Valley Electrical Power Company, the London United Tramways Company, Limited; the Bath Tramways Company, Limited; Exeter Corporation, Newcastle Corporation, and the Swansea Corporation.

The erection and equipment of the works at Trafford Park have absorbed the bulk of the available capital of the company, comprising, approximately, \$8,750,000, of which \$5,000,000 are in 6 per cent. preference shares and \$3,750,000 in ordinary shares. The extensive business in hand, as well as the new business in prospect—all of which is to be executed at the company's works—will require additional funds for material, labor and working capital generally. The directors therefore propose to create an additional 200,000 6 per cent. preference shares of approximately \$25 each, one-half of which is to be issued immediately, believing that the use of such additional capital will result in a higher percentage of profits to the company.

**The German Sheet Syndicate.**—The 45 members of the German Sheet Syndicate have a minimum participation of 368,000 metric tons based on sheets 0.039 inch thickness. Heavier sheets are figured at a lower rate, while lighter sheets are counted at a larger rate. Thus 100 pounds of sheets 0.059 inch are counted as 80 pounds, while 100 pounds of 0.0197 inch sheets are counted as 180 pounds and 100 pounds of 0.0148 inch sheets at 260 pounds. The basis is a capacity of 4 metric tons per 12-hour shift. The different districts participate in the following proportion: Rhenish Westphalia, 185,000 tons; Sleg and Lenne, 115,000 tons; South German, 42,000, and Upper Silesia, 26,000 tons. The largest individual mills are Dillinger Huetterwerke, 32,000 tons; Wolf, Netter & Jacobl, 25,000 tons; Stahlwerk Hoesch, 22,000 tons, and Grillo, Kunke & Co., 21,000 tons. The outside mills, some of which co-operate with the syndicate, represent a tonnage of about 40,000 tons. The sales and distribution of specifications are managed by Verband Deutscher Feinblech-Walzwerke, at Cologne.

**The Pittsburgh Meter Company.**—The Pittsburgh Meter Company of East Pittsburgh, Pa., manufacturers of water meters and gas meters, have plans out for a new building, 60 x 250 feet, four stories high, steel and brick construction, which has been found necessary owing to the congested condition of their present works and which they are putting up in order to increase their output, as the demand for their meters is greater than they can fill. Their Westinghouse gas meter and proportional gas meter have been tried under all conditions of service and have demonstrated the fact that they are reliable meters for measuring natural gas. The company have also been unable to supply the demand for their water meters, but with their new factory combined with their present plant they expect to be able

to increase their capacity at least 200 per cent. The company at present manufacture the Westinghouse gas meter, the Westinghouse proportional gas meter, Westinghouse pressure regulators, natural gas burners for boilers and Keystone water meters, and in the near future will increase their line with other specialties.

**The Etna Iron & Tube Works.**—Extensive improvements have been made at the Etna Iron & Tube Works of Spang, Chalfant & Co., Incorporated, at Etna, near Pittsburgh. Plans have been prepared for the erection of a new guide mill, and when this is completed the old mill will be torn down and removed. The new mill will greatly increase the output of bar and skelp. At present there are in the rolling mill department, one double and 25 single puddling furnaces, also three scrap furnaces, seven heating furnaces, five trains of rolls and three hammers. Charles E. Henderson, general manager, advises us that while their rolling mill capacity is 55,000 tons annually, their capacity for the manufacture of pipes and tubes is 100,000 tons per year, and a full line of sizes from 1/8-inch to 24 inches in diameter. Spang, Chalfant & Co., Incorporated, are one of the oldest concerns in the country making tubes, having been established in 1828. They recently installed a lap weld furnace that will make pipe up to 24 inches in diameter.

**Belgian Pig Iron Output in 1902.**—The output of pig iron in Belgium in 1902 was 1,102,910 metric tons, as against 765,420 tons in 1901. The following table shows the output in December and the detailed figures for the year:

	December.		The year.	
	1902.	1901.	1902.	1901.
	Tons.	Tons.	Tons.	Tons.
Forge .....	20,057	16,430	256,435	166,955
Foundry .....	11,470	8,990	108,560	92,700
Bessemer and basic.	73,625	41,230	737,915	505,765
Totals .....	105,151	66,650	1,102,910	765,420

The wire nail department of the Duncanville Works of the American Steel & Wire Company, at Duncanville, Pa., is being dismantled and the greater part of the equipment will be removed to the Pittsburgh and Rankin works of the company, at Pittsburgh.

At Pittsburgh, the Pennsylvania Railroad Company have given a contract to Bollinger Brothers for the building of a grain elevator, capable of handling 100,000 bushels of grain. The elevator will be equipped with modern electrical machinery and will be able to handle a carload of grain in about five minutes. It will be water proof to a point above high water mark, and will also be made absolutely fire proof.

The Ohio Pressed Steel Company of Youngstown, Ohio, have been incorporated with a capital stock of \$25,000. The incorporators are John T. Harrington, A. L. Rowland, H. M. Robinson, T. L. Robinson and Richard Fitzgerald. They will make pressed steel specialties.

A very satisfactory test of the new 8-inch continuous mill at the Brown-Bonnell Works of the Republic Iron & Steel Company, at Youngstown, Ohio, was made last week. The machinery worked very smoothly, and the mill is now in operation. It was designed by Thomas Parrock and John Bott.

The Insurance Engineering Experiment Station, of which Edward Atkinson of Boston is president, has published Report No. V, on "Slow Burning or Mill Construction." The price is 25 cents.

The Central Connellsville Company, operating a coke plant at New Salem, Fayette County, Pa., having 200 ovens, will add 150 new ovens.

It is officially denied that the Pittsburgh Coal Company will take over the Mansfield Coal & Coke Company.



### Iron and Industrial Stocks.

The week has been devoid of sensational movement, either up or down. The great January boom which was expected in the stock market, like other expected events, failed to develop. Stocks therefore have shown little change, except in a few instances. Colorado Fuel receded from 77½ last week to 73¼ on Tuesday of this week. On the other hand Republic, Car & Foundry, Sloss-Sheffield and Virginia Iron were conspicuously strong. Sloss-Sheffield common advanced from 61½ last Wednesday to 65 on Tuesday of this week, and Virginia Iron bonds from 73 to 79.

The Philadelphia *News Bureau* states that it develops that of the Consolidated Lake Superior Company's \$2,000,000 indebtedness no less than \$1,500,000 was owed to banks. What is more astonishing, nearly \$1,000,000 of this was unsecured, being simply notes of the company. The balance of the \$2,000,000 is represented by unpaid vouchers of the company for construction work. It will thus be seen that the banks have been vitally interested in the successful working out of the Consolidated Lake Superior proposition, not only because they have been lenders on the stocks as collateral to brokerage houses, but certain institutions have also been actual lenders of over \$1,500,000 to the company themselves. Another point which is interesting to the stockholders is what steps will be taken to press the payment on about \$5,500,000 preferred stock purchased by various individuals under a written agreement. This stock is the portion sold of the \$10,000,000 block which was offered by the company, under terms of payment on instalments covering two years, and of which instalments but two have become due. Default occurred very generally among the purchasers, it is stated, on the second instalment, and according to the terms of the agreement of purchase there appears nothing to relieve purchasers of their liability. To the contrary it is provided that when they default in any instalment payment they lose all their rights to the remainder of the preferred stock to be purchased, and also to the 100 per cent. bonus in common stock. Moreover, it would appear that the trustees may sell this stock in the open market and recover from the defaulting purchasers the difference in price on the breach of their contract.

All details relating to the \$3,500,000 loan, which will be made to the Consolidated Lake Superior Company by a syndicate of Philadelphia and New York banks, headed by Speyer & Co. of the latter city, were determined on January 16 at a meeting of the company's directors in Philadelphia. As a result of the meeting the \$3,500,000 loan becomes available immediately.

**Standard Chain Company.**—The annual meeting of the stockholders of the Standard Chain Company will be held in the Frick Building, Pittsburgh, on Tuesday, February 17, when action will be taken on a proposition to reduce the capital stock of the concern. It is stated that the assent of about 90 per cent. of the stockholders has been given to the proposed change. It is suggested by the directors that the capital stock be decreased from \$3,000,000 to \$1,500,000. The proposition provides that holders of the present preferred stock are to receive one share of common stock for each share of preferred stock held by them, and the holders of four shares of common stock are to receive one share of the new common stock in exchange. The advantages of the plan are that all stockholders will be interested in one class of stock. The reduction in the capital will save an annual franchise tax of about \$1000. It is expected that under the proposed arrangement the directors will be able to pay quarterly dividends, beginning this year. Of the authorized preferred stock \$1,031,400, and of the common stock \$1,277,200 has been issued. The company have a bonded debt of \$700,000 6 per cent. 20-year bonds. The last dividend on the preferred was paid on November 1, 1901.

**Dividends.**—The United States Cast Iron Pipe & Foundry Company have declared the regular quarterly dividend of 1 per cent. on the preferred stock.

The Amalgamated Copper Company have declared the usual quarterly dividend of ½ per cent., payable February 24.

The Allis-Chalmers Company have declared the regular quarterly dividend of 1¼ per cent. on the preferred stock, payable February 2.

The Tidewater Steel Company have declared the regular semiannual dividend of 3 per cent. on the preferred stock.

The directors of the Manufacturers Light & Heat Company, Pittsburgh, have declared their regular quarterly dividend of 2½ per cent., payable January 20. Three months ago the dividend was increased to 2 per cent. and ½ per cent. extra, so the present action merely signifies the intention of the company to place the stock on a permanent 10 per cent. basis. The earnings of the company in December were the largest in their history, approximating \$190,000.

The Pittsburgh Coal Company of Pittsburgh have secured a contract from the Republic Iron & Steel Com-

pany for a supply of coal for the mills at Youngstown, Ohio, for the year 1903. It is said the contract calls for about 1,000,000 tons of coal, and is one of the largest individual contracts for coal placed in a long time.

### An Injunction Against the Structural Iron Workers.

(By Telegraph.)

PITTSBURGH, Pa., January 21, 1903.—The Brown Hoisting Machinery Company of Cleveland have filed a bill in equity against the International Association of Bridge and Structural Iron Workers to restrain it, its officers and members from interfering with the plaintiff's workmen at the Isabella furnaces of the American Steel Hoop Company, at Etna, Pa. The plaintiff company have a contract for erecting bridges at the furnaces named and brought a number of their workmen from Cleveland. It is alleged that the defendants by threat and force have tried to drive the workmen away. The employees of the plaintiff company, it is said, are willing to work if permitted by the defendants.

### PERSONAL.

W. L. Jacoby of South Bethlehem, Pa., has been appointed general superintendent of the Latrobe Steel & Coupler Company of Chicago, Ill.

Frank Townsend, chief electrician at the works of the Youngstown Iron, Sheet & Tube Company, Youngstown, Ohio, has resigned to accept a similar position at the Lorain, Ohio, Works of the Federal Steel Company.

C. H. Freeman of the firm of Freeman & Co., St. Louis, Mo., has retired from the iron and steel business. He is succeeded by E. R. Hensel, who has been associated with Mr. Freeman in the business for the past ten years.

C. P. Wheeler of Pickands, Brown & Co., Chicago, sailed last week with his family for a stay of three months in Southern Europe.

It is stated that the promoters of the lead combination have, for legal reasons, changed their proposed plans of organization. The first plan proposed was for the National Lead Company to increase their capital stock and take over the other lead manufacturing concerns on a basis of an exchange of stock. This plan had been practically perfected, when the attorneys in the matter decided that that plan would be open to grave objection and might be attacked seriously in the courts. They have therefore prepared a new plan which is in the nature of a holding company, who on their part will take over all the lead manufacturing concerns, including the National Lead Company themselves.

The Rotary Woven Wire Fence Company have been organized at Pittsburgh to manufacture woven wire fencing. It is said that the new company will build a new plant at Columbus, Ohio, and also one in the Pittsburgh district. It is possible that a steel plant, rod mills and wire drawing plant will be built by the new company.

The auditors of the Union Steel Company have completed the audit of the accounts of the Sharon Steel Company, at Sharon, Pa. Auditors of the United States Steel Corporation will now go over the accounts and expect to complete the work by February 1, at which time bonds of the Union Steel Company will be issued to stockholders of the Sharon Steel Company, interest on which will be guaranteed by the Steel Corporation.

The statement is published that orders have been issued by the management of the Union Pacific Railroad Company to install a gasoline engine at every water tank in Kansas where the water is pumped from wells by wind mills.

A. F. Spencer, a well known file manufacturer, of Lancaster, Pa., died suddenly from heart disease on January 17, at his home in that city, aged 65 years.

# HARDWARE.

THE existence of a large number of retail Hardware associations will soon be impressed upon the trade in general in an emphatic manner, as during the next month or two the annual meetings of many of these organizations will be held. There was a time when this movement was looked upon as of little significance or promise, but that time has passed. The organization of retail Hardware merchants has progressed so far that it commands attention. The official announcement that there are 3500 merchants who are, through their various State associations, identified with the National Retail Hardware Dealers' Association will give to those who have not kept in touch with the movement something of an adequate sense of its importance as a factor which must even now be taken account of and the future influence of which will unquestionably be great. The wide extent of territory which is represented by these organizations gives added force to a mere statement of their membership, for it is a splendid portion of the country and a most important market which is comprised within the following States, which are represented in the National Association: Arkansas, Illinois, Indiana, Indian Territory, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, New York, North Dakota, Ohio, Pennsylvania and Wisconsin. In addition to the above there are also the following organizations, some of which are exceedingly active and useful, but have not for one reason or another identified themselves with the National Association: California State Retail Hardware Association, New England Retail Hardware Dealers' Association, Tennessee Hardware Association, Texas Retail Hardware and Implement Dealers' Association, and Washington Hardware Association. Steps looking to the organization of associations in other States are being taken, and it is reasonably certain that there will be constant accessions to the number of these organizations, whose object is the protection and advancement of the interests of retail Hardware merchants.

Each State association has an important work to do within its own borders. Trade abuses, encroachments on the retailer's domain, illegitimate competition in various ways, together with the inducing of a more fraternal spirit among the members and the cultivation of better business methods in the conduct of their affairs, are some of the beneficial results of the associations. Things which militate against the retailer's interests and conflict with what he regards as his rights are brought by the individual merchant to the attention of the State association, which takes the matter up in such way as they deem wise with a view to correcting the grievance, if on examination the complaint is found to be justified by the facts. Their efforts in this direction are, we understand, often successful, and the cause for complaint is in that case at least removed. These relations of the retail interests to the trade at large are also in the care of the National Association, which is made up of representatives from the State associations and is thus in a position to give its countenance and support to efforts of the State organizations, which thus are given a weight which they would not otherwise possess. This National Association is under the direction of men whose ability and standing in the trade is such as to insure a broad minded, judicious and firm administration of the responsibility resting upon them.

In view of all the features of this organization movement among the retail Hardware trade it is obvious that it

is deserving of hearty support from the class of trade it represents, and of cordial recognition from both manufacturers and jobbers. The establishment of harmonious relations between the great branches of the trade should be a matter desired by all and promoted by an intelligent recognition of the rights of each. In order to this understanding there should be some way in which their representatives may be brought together for conference. Perhaps the meetings which will be held during the next month or two will develop something in this direction.

## Condition of Trade.

There is in general a very satisfactory condition of things in the Hardware market and an increasing volume of business. The trade generally are purchasing with a good degree of liberality, apparently having confidence in the stability of prices for at least some months to come. Such staple lines as Nails and Wire are characterized by a steady and firm tone, and in lines in which irregularities have existed there is a somewhat better feeling. On the whole the market is assuming a shape which promises well for the business of the spring. In a number of branches manufacturers are still behind their orders, even at this late date, not having entirely cleared their books. Stocks in their warehouses are as a rule light, and it is not unlikely that delay in executing orders in some lines will be experienced before long. There is no doubt that the year was entered upon with manufacturers' stocks much below normal. Those held by the jobbers are on the whole of fair volume, some goods being held in good quantities, while stocks of others, on account of difficulty in obtaining them, are more or less broken. The process of revising prices which is looked for at this season has developed apparently few changes of importance, but there has been a good deal of modification in some of the minor details of quotation, exceptional extras being withdrawn or granted according to the circumstances. On the whole the market has, it is thought, been toning up. Reports from the trade throughout the country continue to promise good business. Very satisfactory statistics about the general export business of the country are recognized as having a direct bearing for the better on domestic conditions, as a large volume of foreign trade will contribute substantially to the general prosperity. There is also a fairly satisfactory business doing in Hardware and related lines with foreign markets. A let up, however, in the urgency of the demand of home trade would undoubtedly result in greater attention being paid to export business, which, while it has not been entirely neglected, has not from many manufacturers recently received the attention it deserves. Others have, however, taken a broad view of the matter and have given the best care to their far off trade and prosecuted energetically plans for its extension. The wisdom of this course will probably be evident before long.

### Chicago.

(By Telegraph.)

A strong and confident tone prevails in the various lines of Hardware, with the tendency toward higher prices on all lines which have not yet felt the adjustment incidental to the high prices prevailing for raw material. The movement of General Hardware for quick delivery has increased materially during the week, but it is difficult to pick out any special line as deserving of attention above another. It is notable, however, that the demand for such lines of cold weather goods as Coal Hods, Stove Boards, Pipe, Elbows, &c., which usually falls off after the first of the year, has increased rather



than otherwise during the first half of January. The demand for Mechanics' Tools has received a stimulus, and considerable Builders' Hardware is being sold for January and February shipment. In the main, however, business of this character is largely for spring delivery and considerable business of moment is pending. One feature of significance is that on such goods as Bolts, Nuts, Washers, Harrow Teeth, &c., upon which there has been considerable irregularity in prices up to and during the first week of the year has largely disappeared during the past ten days, it being difficult to obtain any concessions from either manufacturers or dealers. All Heavy Hardware is strengthening, there being a feeling that further advances may be made within the near future. Jobbers of Bars and other heavy material have covered largely for some months to come. The same is true of Galvanized Sheets, some important contracts having been recently placed, in marked contrast to the unsettled, weak and slow market experienced for months past. Prices from local stocks have been advanced. It is worthy of note, too, that the recent advance in freight rates is reflected in an additional charge to consumers to cover such increase. As we are about to go to press a meeting is being held by manufacturers of Registers, but it has already been announced that an advance has been determined upon: just how much will depend upon circumstances which will develop at the meeting. In the jobbing trade the continued receipt of orders for Steel Goods, including Hoes, Rakes and Forks; for Poultry Netting, Screen Doors and Windows and Wire Cloth for spring delivery has been a feature of prominence. A point of interest is the unusual activity experienced by manufacturers of Bicycles, the month of December, 1902, proving to be one of the best months for fully a year.

#### St. Louis.

(By Telegraph.)

The demand in the Hardware market shows great steadiness with tendency to increase volume, and records for January thus far point to a substantial gain over the corresponding month last year. The early call for Screens, Screen Doors, &c., is very good, and jobbers are anticipating large requirements, forecasting the spring trade in this line by placing liberal orders with the manufacturers. It is remarked that the mills turning out Fly Screen Cloth are hard pressed to supply the demand. The trade in Steel Goods, such as Scythes, Rakes, &c., is heavy and worthy of special mention. The advance in some directions and tendency to hardening of prices in others is still an important consideration to the dealer. In line with Shelf Hardware the heavy department of the market feels the improvement in the demand.

#### From a Western Manufacturer.

Except from the territory which has been affected by the extreme low rates which have prevailed for the last two or three months to Colorado points, which have been made applicable to intermediate points by application of the Interstate Commerce law, we expect a large spring trade. The territory named has availed itself of the extremely low rates which have prevailed to stock up more largely than it otherwise would, and we do not expect any large trade from that territory before midsummer or late in the fall next year. The demand, however, from the North and Northwest, South and Southwest we expect will be very large indeed, especially in sections of Northern Iowa and Southern Minnesota on the northern edge of the corn belt. The purchasing power of the people does not seem to have been diminished materially. Cattle and hogs have been bringing good prices and the farming community seems to be well provided with money and willing to spend it. We look for customary conditions to govern the trade for the next six to nine months—that is to say, we shall look for a falling off commencing about June 1 and extending perhaps until the middle of August. This, however will be governed a good deal by weather conditions. Last spring trade dropped off very early in May and did not revive again until September and October. This was occasioned by the lateness of the season and

serious outlook for the corn crop, and these conditions will govern the coming year more or less, but we look for the ordinary dull season in the summer months. Prior to this last summer for at least two years business conditions in the Iron and Steel trade, at least, were phenomenal. There was no "dull season" so called; the demand for goods kept full tide during the summer months. We do not look for a repetition of these conditions.

We think the country generally is now fairly well stocked, so that we may look for usual conditions to prevail. We do not look for any serious let up in the demand for goods so long as anything like present prices prevail for cattle and hogs. The possession of either or both of these animals on the part of a farmer presupposes the man to be well fixed financially. It is only the poor man who sells his corn—the man who has not the capital to buy cattle and hogs to feed. The price of these two articles determines to a very large degree the purchasing power of the Western country and determines whether they buy Iron and Steel products or not.

#### From a Pennsylvania Manufacturer.

We had in 1902 the largest business ever enjoyed by this company, and during at least half of the time we had very large orders for our products, but which we could not accept as we were filled with orders to the very limit of our production. We find the great consumers anxious to contract for their next year's supply on the basis of to-day's market prices. They appreciate the vexatious delays they experienced during last spring and summer in regard to shipments, and we find that specifications will be placed with us this year very much earlier than usual. Their calls upon us during the past year were greater than ever before, and the car companies and railroads have never used so large a tonnage of our product, and their demand upon us will be even larger in 1903 than in 1902.

We fully appreciate the jobbers' hesitancy during the last two months in placing orders for future shipment on account of the reduction in price made on several of their staple lines, such as Nails, Sheets and Pipe, and they construed the weakness in those lines as a weakness in the whole Steel situation; but many of them who have more closely looked into the market conditions find that the conditions surrounding those lines are rather peculiar and many of them now are placing most liberal contracts for next season. We do not anticipate any material advance in prices, except that premiums will probably be paid for prompt deliveries during the busier seasons of the year, the same as were paid during the summer months of the year just closed. All sections of the country seem to be very prosperous and we can see no cloud as yet on the commercial horizon.

### NOTES ON PRICES.

**Wire Nails.**—The demand continues steady, on a firm market. As a rule manufacturers are not accepting contracts for delivery longer than 60 days from date of order. Quotations are as follows:

Jobbers, carload lots.....	\$1.90
Retailers, carload lots.....	1.95
Retailers, less than carload lots.....	2.05

**New York.**—Local demand is light, though considered satisfactory for the season. Quotations are as follows: Single carloads, \$2.10; small lots from store, \$2.15.

**Chicago, by Telegraph.**—There has been a fair volume of business experienced by both manufacturers and jobbers, although less pressure from extraordinary conditions. As a rule prices are well sustained as previously quoted. Official quotations remain at \$2.10 in carload lots, mill shipment, and \$2.20 in less than carload lots, f.o.b. Chicago.

**St. Louis, by Telegraph.**—The volume of demand for Wire Nails continues very good and improvement from day to day is apparent. Small lots from store continue to be quoted at \$2.20.

**Pittsburgh.**—We note a satisfactory demand for Wire Nails and the tone of the market is quite firm. A num-

ber of large contracts were placed by leading jobbers before the recent advance in prices and specifications for these are coming in very freely. Prompt deliveries are still difficult to obtain, owing to congested condition of the railroads, and also to the fact that the Wire Nail mills are having more or less trouble in getting fuel, while deliveries of Steel are also unsatisfactory. We quote \$1.90 in carloads to jobbers, \$1.95 in carloads to retailers and \$2.05 in small lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days. For galvanizing Nails 75 cents per keg is charged and for tinning Nails \$1.50 per keg extra.

**Cut Nails.**—At the meeting of the Cut Nail manufacturers held on the 15th inst. prices were advanced 5 cents per keg for domestic trade. The advance was contrary to the anticipation of the trade in general, but the meeting developed a strong feeling in favor of a slight advance. Mills have generally been behind orders for some time and there is no prospect of an immediate reduction in the cost of material or labor, both of which are high. Quotations are as follows: \$2.10, base, in carloads, and \$2.15 in less than carloads, f.o.b. Pittsburgh, plus freight in Tube Rate Book to point of destination; terms 60 days, less 2 per cent. off in 10 days.

**New York.**—Cut Nails continue in light demand. The 5 cents per keg advance is being generally charged by local jobbers. Quotations for carloads and less than carloads at the advance are as follows:

Carloads on dock.....	\$2.23
Less than carloads on dock.....	2.28
Small lots from store.....	2.35

**Chicago, by Telegraph.**—There has been some little increase in the demand, and the market is firmer in tone. Manufacturers at their recent meeting advanced prices 5 cents per keg in carload lots. In the main sales have been made in this market on the basis of \$2.21½ in carload lots and \$2.31½ in less than carload lots for Steel, Chicago, while Iron Nails have been selling in small lots as high as \$2.50 from store, Chicago.

**St. Louis, by Telegraph.**—Cut Nails are reported in moderate call, and price in small lots from store is \$2.40.

**Pittsburgh.**—A meeting of the Cut Nail Manufacturers' Association was held in New York City on Thursday, January 14, and an advance of 5 cents per keg was made in price of Steel Cut Nails. No advance was made on Iron Cut Nails. There is a good demand and the tone of the market is firm. We quote as follows: Steel Cut Nails, \$2.10, base, in carloads and \$2.15 in less than carloads, f.o.b. Pittsburgh, plus freight in Tube Rate Book to point of destination, 60 days, less 2 per cent. off in 10 days. Iron Cut Nails take 10 cents advance over Steel.

**Barb Wire.**—Orders have decreased somewhat in volume, owing probably to the liberal contracts that have been placed. The market remains firm at the recent advance. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots.....	\$2.20	\$2.50
Retailers, carload lots.....	2.25	2.55
Retailers, less than carload lots.....	2.35	2.65

**Chicago, by Telegraph.**—The volume of business, while less heavy than during the rush period, is quite satisfactory, and the market continues strong. Galvanized is selling at \$2.70 in carload lots and \$2.80 in less than carload lots, Chicago. There is a good demand for Staples, and the market is firmer, sales being made by jobbers on the basis of \$2.25 in carload lots and \$2.35 in less than carload lots, Chicago.

**St. Louis, by Telegraph.**—With the jobbing trade the volume of orders for Barb Wire continues steady, and is quoted in small lots from store at \$2.50 for Painted and \$2.80 for Galvanized.

**Pittsburgh.**—Only a fair amount of new business is going, most of the large contracts having been placed by the leading jobbers before the recent advance in prices. Specifications on these contracts are now being received by the mills, all of which are very busily employed. The tone of the market is firm and we quote as

follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in 10 days: Painted, \$2.20; Galvanized, \$2.50, in carload lots to jobbers; Painted, \$2.25; Galvanized, \$2.55, in carloads to retailers; Painted, \$2.35; Galvanized, \$2.65, in small lots to retailers.

**Plain Wire.**—Demand has been fairly well sustained and the tone of the market is firm. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....	\$1.80
Retailers, carloads.....	1.85
Less than carloads.....	1.95

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

6 to 9	10	11	12	12½	13	14	15	16	17	18
Base \$0.05	.10	.15	.25	.35	.45	.55	.70	.85	Plain.	
\$0.30	.35	.40	.45	.55	.65	1.05	1.15	1.70	1.85	Galv.

**Chicago, by Telegraph.**—Manufacturers have continued to experience a fair volume of business and the market has continued strong. The jobbing trade, while quiet, has been satisfactory, with full prices obtained. Nos. 6 to 9, in carload lots, are held at \$2 on track and \$2.10 from store, Galvanized bringing 30 cents extra for Nos. 4 to 14.

**St. Louis, by Telegraph.**—A fair volume of trade is being handled by the trade for Plain Wire, and quotations are unchanged, No. 9 at \$2.10 and Galvanized at \$2.40.

**Pittsburgh.**—Business has shown a falling off, due no doubt to the fact that large buyers placed their contracts last month and demand now is mostly for small lots. The mills have a good deal of tonnage booked for delivery in the first three or four months of this year. The market is firm and we quote: Plain Wire, \$1.80, base, for Nos. 6 to 9, in carloads to jobbers, \$1.85 in carloads to retailers and \$1.95 in small lots to retailers; Galvanized 30 cents extra for Nos. 6 to 14 and 60 cents extra for Nos. 15 and 16.

**Carriage Bolts.**—The market on Carriage Bolts has not of late been entirely even, as some concessions have been made by manufacturers. This condition begins to show itself in prices to the retail trade, to whom the jobbers are in some cases making concessions. There appear, however, to be indications of an improved condition in this line, and some are of the opinion that prices will again become more firm and uniform.

**Revolvers.**—The arrangement between the manufacturers of Revolvers for securing regularity in the prices at which the goods are sold appears to be working admirably, and a slight advance has been made in this line.

**Chain.**—Owing to the fact that a number of manufacturers have been entering the field prices on Coil and other Chains are somewhat uneven, and concessions have been more or less freely made.

**Holdfast Wire Clinching Nails.**—The prices to the general trade on Holdfast Patent Wire Clinching Nails, which are made by Charles F. Baker & Co., Boston, Mass., are as follows, the new list having gone into effect January 1:

10 cents per pound for all lengths of No. 16 wire.
12 cents per pound for all lengths of No. 17 wire.

**Cordage.**—The demand for Rope, while not exceedingly large, is better than before the first of the year. Manila Rope is quoted on the basis of 7-16 inch and larger at 11 to 11½ cents per pound. Sisal Rope, on the same basis, is quoted at 8 to 9½ cents per pound. A rebate of ¼ cent per pound is allowed on large quantities.

**Binder Twine.**—No decisive movement has been taken in the Binder Twine market. The International Harvester Company have announced no quotations, as far as can be learned, and other manufacturers are naming no prices as yet. The opinion is expressed that outside the larger interest a comparatively small amount of Twine will be made, and that largely on orders for customers who prefer certain brands.

**Building Paper.**—The manufacturers of Rosin Sized Sheathing have recently advanced the price of this product \$3 a ton. For New York territory in carload lots



It is now \$31 per ton and \$34 per ton for less than carloads. For territory other than in the immediate vicinity of New York the price is governed by the distance from original sources of supply and the consequent change in freight rates.

**Glass.**—There is nothing of interest transpiring in the Window Glass market. Local jobbers are doing very little business, though there is a reported absence of price cutting. Glass is in the warehouses awaiting demand, but the trade are not placing orders. It is not anticipated that any advance in prices will take place before April 1, so that no advantage would be gained by ordering at this time. Jobbers' Association quotations are as follows:

	Discount.
From store.....	.90 and 10 %
F.o.b. factory, carload lots.....	.90 and 20 and 2½ %
F.o.b. factory, 2000-box lots.....	.90 and 25 %

**Oils.**—*Linseed Oil.*—A moderate demand for small lots of Oil and deliveries on previous contracts are supplying the present demand. A limited amount of business is being done in futures. Quotations, according to quantity, are being well maintained as follows: City Raw, 46 to 47 cents; State and Western Raw, 45 to 46 cents per gallon.

**Spirits Turpentine.**—The market continues to advance on bullish reports from Savannah. Local business is light, although the market is firm in tone. Quotations, according to quantity, are as follows: Southern, 60½ to 61 cents; machine made barrels, 61 to 61½ cents per gallon.

## Hardware Organizations.

### Ohio Hardware Dealers' Mutual Fire Insurance Company.

The directors of the Ohio Hardware Dealers' Mutual Fire Insurance Company met in their headquarters in the Gray Building, Coshocton, Ohio, on Tuesday, January 14. The following officers were present: J. P. Duffey, president; Geo. M. Gray, secretary and treasurer; G. V. Guyton, Ada, and Geo. B. Meyer, Cincinnati, directors. Henry F. Rahe, Cleveland, missed his train, and could not attend. The directors audited the books and approved the first annual report, which has since been received and approved by the Insurance Department at Columbus.

This company are the offspring of the Ohio Hardware Association, having been organized by the association for the members of the association and the Hardware trade of the State. They furnish insurance at absolute cost, and at a minimum of expense of operation. The building up of this company has been done by the committee which was appointed at the last annual convention of the association. This committee has worked faithfully and earnestly for almost a year without any compensation whatever, every dollar thus saved inuring to the benefit of all the policy holders. It is the desire of the committee that the company have 1000 policies at the close of the next convention. This means lots of work and much expense. To save both work and expense they want to meet all the Hardwaremen of the State at the next convention of the association, February 24, 25, 26, at Columbus. The committee will have headquarters at the Great Southern Hotel. It looks as though the coming meeting would be the largest and best in the history of the association from the insurance feature alone.

### Missouri Retail Stove and Hardware Dealers' Association.

The annual meeting of the Missouri Retail Stove and Hardware Dealers' Association will be held at the Mercantile Club in St. Louis, on February 11 and 12. Arrangements have been made with the railroads by which the round trip may be made at the rate of one fare and a fifth. A special feature of the convention will be the consideration of the advisability of forming an insurance company for the benefit of the members of the association. It is confidently expected that such a com-

pany will be organized in view of the saving thus effected in the cost of insurance to the merchant. Among the papers which will be read at the meeting will be those of J. W. Poland, Carrollton, "Troubles of the Trade;" O. W. Johnston, Marshall, "Are Retailers Adjusting Their Methods to 20th Century Conditions;" Frank H. Mayer, Macon, "Are Business Conditions Changing;" Frederick Neudorff, St. Joseph, "Status of Mutual Insurance;" E. L. Wachter, St. Louis, "Clean Advertising;" M. L. Corey, secretary of the National Association, will also address the gathering. As usual the Question Box will be a feature, affording a vehicle by which members may informally bring up for discussion any matters upon which they desire light or the experience of others. On the evening of the 11th inst. a complimentary banquet will be tendered to the association by the St. Louis retail Hardware dealers at the Mercantile Club. The association officers are looking forward to a large and interesting meeting, and it is hoped that all who can possibly come will lend the occasion their presence and support. Frederick Neudorff of St. Joseph is secretary, and will be glad to furnish any particulars desired.

### Wisconsin Retail Hardware Association.

The attractively printed programme for the seventh annual meeting of the Wisconsin Retail Hardware Association at Milwaukee on February 4 and 5 has been issued. As usual, besides the programme of exercises, it contains list of members and constitution and by-laws, together with a reference to the National Association, showing the splendid position now occupied by this defender of the interests and welfare of the retail Hardware merchants of the country. The programme for the convention includes the following papers on topics of interest to the Hardwareman: "Pricing Stocks," by H. C. Scofield, Sturgeon Bay; "Kindred Lines," by Ralph Burtis, Oshkosh; "Local Associations," by Emil Teitjen, Manitowoc; "Profits of Rising vs. Declining Market," by Fred. R. Peck, Berlin; "Warranting Goods," by O. A. Labudde, Elkhart Lake. It is planned to have general discussions on the subjects of profits and competitors, while the Question Box will also be in evidence. Accompanying the programme is a leaflet, from which we make the following extract, in which the advantage of membership in the association is dwelt upon:

We think we are safe in saying that the records will show that at least 80 per cent. of the changes in the retail Hardware trade of Wisconsin during the past four years has been among those who were not members of the association. Now, is it unfair to draw from that fact the conclusion that the members of the association were, as a class, making money and were satisfied, possibly owing to the benefits received at our annual meetings, and if so, hadn't you better join the association now? We want you with us and believe we can do you good.

Arrangements have been made by which a railroad rate of a fare and a third for the round trip will be granted if 100 merchants from outside Milwaukee attend, a number which it is confidently expected will be exceeded.

### Iowa Retail Hardware Dealers' Association.

The annual gathering of the Iowa Retail Hardware Dealers' Association will be held at Des Moines on February 11, 12 and 13. The official programme of the meeting has not yet been issued.

### Indiana Retail Hardware Dealers' Association.

The annual convention of the Indiana Retail Hardware Dealers' Association will be held on February 17, 18 and 19, with headquarters at the Denison Hotel. Many questions of interest will be brought up in which the relations of retailers to jobbers and manufacturers will be considered. The manufacturers and jobbers of Indianapolis will tender the association a banquet at the Columbia Club on the evening of the 18th inst. There will also be a smoker and vaudeville entertainment at the Denison on Tuesday evening. Arrangements have been perfected by which the delegates can make the trip at a reduced rate.

### New York State Association of Retail Hardware Dealers.

The annual meeting of the New York State Association of Retail Hardware Dealers will be held at the Astor House, New York City, on March 11 and 12. Arrangements are proceeding which, it is hoped, will result in an exceptionally interesting and instructive meeting. A number of addresses will be made by well-known manufacturers and jobbers, and it is also expected that prominent officials representing the National Retail Hardware Dealers' Association and some of the State associations will be present.

This association, less than a year old, has almost doubled its membership since the organization meeting, and a good many accessions are expected as a result of the approaching convention. John R. Taylor of Little Falls, N. Y., the energetic secretary of the association, together with the other officials, has been giving careful and intelligent attention to the promotion of the retail merchants' interests and welfare. Mr. Taylor especially has done much to put a stop to the practice by which some of the railroad agents throughout the State have acted as agents for a Western catalogue house, distributing the latter's catalogues to farmers and mechanics, thus virtually constituting themselves solicitors for business for this house. Mr. Taylor personally obtained the necessary evidence of the guilt of several of these railroad agents and laid the matter before the officials of the various railroads traversing the State. The result of his efforts was the issuing of circulars by many, if not all, the railroads in the State similar in scope to the following, which has been issued by the New York Central & Hudson River Railroad and West Shore Railroad:

FREIGHT DEPARTMENT.

N. Y. C. & H. R. R. R. CIRCULAR NO. 2417.

WEST SHORE R. R. CIRCULAR NO. 1610.

#### Non-Distribution by Railroad Agents of Advertising Matter.

##### To Agents:

*We are advised that some business concerns are sending circulars or letters to railroad agents, requesting them to distribute trade catalogues, advertising matter, samples, &c., to various firms and individuals, and promising agents some form of reward or premium for their services.*

*Agents are hereby instructed not to make or undertake the distribution of such advertising matter, &c., either directly or indirectly. All communications requesting such distribution must be forwarded by agents receiving same to their Division Freight Agent for answer or proper disposition.*

This circular is signed by the general freight agents of the companies. In this way a practice which was very annoying to Hardware merchants in a number of towns has been effectually stopped.

### DEATH OF HENRY S. BLOSSOM.

**H**ENRY S. BLOSSOM, secretary of the W. Bingham Company, Cleveland, Ohio, died at his home, "The Oaks," in East Cleveland, January 18, from the effects of a second stroke of apoplexy, the first of which occurred November 28, 1902. His condition had improved to such an extent since then that he had again turned his attention to business when the second stroke ended his life.

H. S. Blossom, son of the late Henry C. Blossom, the latter one of the founders of the W. Bingham Company, was born in Cleveland, February 2, 1852. After graduating from the Cleveland High School he finished his education at the Polytechnic Institute in Brooklyn in 1870, entering the employ of the Bingham Company the following autumn. He was admitted as a partner in 1875,

and was chosen secretary when the business was incorporated in 1888. Mr. Blossom was also closely identified with the Standard Tool Company, Cleveland. He was a member of the Cleveland Chamber of Commerce, Union Club, Cleveland Golf Club, Country Club and the Euclid Club.

In 1877 Mr. Blossom was married to Miss Leila Stocking, who died in 1892, he afterward marrying Eva G. Pinson of Atlanta, Ga., who survives him together with five children, four of whom are sons, the eldest, Dudley S., being connected with the W. Bingham Company.

All Mr. Blossom's life was spent in Cleveland and he did much to build up the city in a business way, being a liberal contributor to plans for its development and welfare and prominent in the reorganization of the



HENRY S. BLOSSOM.

Chamber of Commerce upon a useful and influential basis, taking an active part in its work.

One who knew Mr. Blossom well refers to his manner as pleasant rather than genial, and, while he seldom laughed, he had a cordial smile which was most agreeable. He was reserved and not given to discussing his personal affairs. As a buyer he had a faculty for clean, incisive work, and in a busy season has been known to finish with 20 salesmen in a forenoon without slighting any of them, and still have his records and prices accurately made. He was notably quick in his decisions and ready to acknowledge a mistake if made. For a long period he had charge of the purchases and sales and in general the direction of the business. Many admirable new features were introduced by him, and he is credited with having done much to advance the interests of the great house with which he was identified. He was a man of strong likes and dislikes, endowed with a strong will and noted for his generous, kindly nature. He had a host of friends who will learn of his death with sincere regret.

He was prominently identified with the National Hardware Association from its inception, if indeed he did not originate the idea, suggesting the project at a meeting of the Cleveland Hardware Jobbers' Association and drafting the constitution presented for adoption at the first meeting.

THE ECLIPSE MACHINE COMPANY, Elmira, N. Y., have purchased all the property, patents, good will and business of the Eclipse Mfg. Company of that city, and will continue the manufacture of the well-known Morrow Coaster Brakes.



## THE TRAVELING SALESMAN HIS METHODS AND CONTROL

BY SAMUEL MASTERS.

### CHAPTER III—Length of Service.

**T**HE older houses who retain their men for long periods have at times a serious condition of affairs confronting them. They find their territory narrowing, and when they lose a customer in any given field or city it is difficult for their salesmen to make satisfactory arrangements with another firm. The old salesman has

#### GROWN INTO A GROOVE.

contenting himself with visiting his regular trade and neglecting to keep in touch with other concerns, until he is at a disadvantage when any change occurs in his territory. Then, it is impossible for a salesman to please every one. He meets with discourtesy from an occasional boorish buyer, or shows some disagreeable traits himself, and a coolness results which leads the salesman to pass by that particular house. The stress of competition between his customer and the other firms of the town may oblige him to confine his attentions to one firm until by long association he becomes locally identified with his customer and he is *non persona grata* with the other dealers. A desire to cover his route quickly or a settled routine which has by time been converted into a habit leads him into a beaten path from which he never strays, and the increased opportunities for an extended trade mean nothing to him.

#### TALK WITH ANY OLD TRAVELER

about his route. Mention the business houses in the various towns and you will find that there are good, live concerns in large number whom he never visits. Often he can give no satisfactory reason for passing them by. In other instances he has grievances to enumerate. In still others he passed by firms in their early days and hesitates to make a beginning after having ignored them until he fears they resent not being offered his line. In short, from a number of causes

#### THE OLD TRAVELER IS CUT OFF

from a very large amount of possible trade, and his employer has to be content with less custom than he might have under happier conditions, or make a change in salesmen—a thing always of hazard, since the old salesman has friends as well as enemies, and it is not certain whether the new man has qualities which will commend him to favor in as great measure as the old one enjoyed.

Besides, if length of service on a route has its disadvantages, so has its antithesis.

#### A NEW SALESMAN HAS HIS FRIENDS TO MAKE.

It is not enough that his house is well and favorably known, the account one of goodly proportions and the connection an old one. There is an effect of estrangement produced by a new salesman, so intimately do customers come to associate a concern with its visible representative, and it takes time to wear this away. So well is this recognized among jobbing houses, the largest employer of salesmen, that a new man is not expected to show adequate results for a year, and the fact that he is but newly started upon a territory is considered sufficient excuse for poor sales. To be sure the difference is not so marked among manufacturers who have famous brands or patented goods, but even here it is noticeable. No new man can expect to hold all of an old one's trade, but if he is a good man and his house is well known he can expect to retain the bulk of it and to gain more than enough new customers to repair any loss; and if the condition of the route is such as to warrant a change he should show from the beginning enough of new trade to make it certain that his venture was a wise one. It is

#### NOT ALWAYS NECESSARY TO SUPPLANT AN OLD SALESMAN.

Many of the men in a rut still do a paying business, and their work creates dissatisfaction not because it is not remunerative, but because of the opportunities for larger business that are not grasped. In such cases it is sometimes possible to lap routes and by allowing

other salesmen to visit towns in the old route where new business can be gained to cover the territory to better advantage than could possibly be done by supplanting the present incumbent. In fact, as territory is closer worked in accordance with modern methods there are few territories east of the Rockies, traveled on a ten year old basis, where new men cannot be set in among the old, the new route often exceeding the old ones in gross sales and net profits, and without in any way disturbing the routine of older men, unless the older customers are jobbers who find they lose an occasional customer direct to the factory, when the old cry of "Don't sell me and my customers too" is heard.

#### NOT ALWAYS THE SALESMAN'S FAULT.

Occasionally the decreased sales on an old route are caused not so much by the salesman's deficiencies as by his employer's shortcomings. Shortsighted men who fail to recognize the changes in business and try to pour new wine into their old bottles—to measure new conditions with old methods, or to supplant the knowledge of the old managers with the theories and red tape of new ones—can so handicap a good man as to conduct a losing business in spite of his loyal efforts. Instances have been known where a change in the sales management has lost the trade of a concern and brought financial ruin. It is then that the salesman must make a change to save himself and to keep the prestige he has won with the customers whom he considers "his." It is far easier for a good man changing to a good house under such conditions to take his customers with him than for his employers to put a new man in his place who will retain any considerable portion of the former custom. A good salesman making such a change on an old route can at times create much new trade by ignoring former personal differences under cloak of the new connection and combine all the advantages of a new salesman with the acquaintance of an old one upon the route.

### CLARK, HORROCKS & CO.'S NEW PLANT.

**C**LARK, HORROCKS & CO., Utica, N. Y., to meet the growing demand for their Fishing Rods, have just completed the erection of a new factory which is situated in the heart of the manufacturing district of Utica. It is built of brick and stone throughout, and is of modern mill construction. In the basement are located the heavy saws and machine shop. The first floor is devoted to the manufacture of Lancewood Rods, and here are located the automatic lathes. Jointed Bamboo Rods are made on the second floor, which also includes the winding and varnishing rooms. The top floor is devoted to the making of Split Bamboo Rods, and also accommodates other light machines. The convenience and advantageous arrangement of this factory place Clark, Horrocks & Co. in a position to make better goods than ever before. In connection with the Fishing Rod manufacture a complete line of general Tackle is carried, on which this firm are in a position to quote.

### O. CHAN WELLS AND WM. A. LOCKE COPARTNERSHIP.

**O.** CHAN WELLS AND WM. A. LOCKE have formed a copartnership which is announced under date of January 15, with headquarters in the Woodbridge Building, 100 William street, New York. They will represent the following concerns on similar but nonconflicting lines of goods—viz.: South Chester Tube Company, Wrought Iron Line and Drive Pipe, Casing, Tubing, &c.; United States Tube & Iron Company, Merchant Pipe; Monongahela Tube Company, Lap Welded Boiler Tubes; Chattanooga Pipe & Foundry Company, Cast Iron Soil Pipe and Fittings; Guilderland Foundry Company, Cast Iron Fittings; Detroit Copper & Brass Rolling Mills, Sheet Brass, Rods, Wire and Tubing; Diamond Stamped Ware Company, Plumbers' Supplies, and Bostwick Steel Lath Company, Steel Lath, Conductor Pipe and Eave Trough. This is a kind of trade with which Mr. Wells is thoroughly conversant, having represented some of these lines for a term of years.

## Letters From the Trade.

*Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.*

### From a Western House in Regard to Syndicate Buying.

*To the Editor:* Syndicate buying has been so grossly abused in the past that it has caused an immense amount of trouble to the jobbing trade.

Syndicate buyers in their anxiety to get customers have taken parties onto their lists that were in no wise entitled to jobbing prices, but now that matter is being followed up very closely and the retailers are being cut off from those lists. This is being done through the extra efforts of the National Hardware Association.

It seems to the writer that manufacturers ought to take an interest in the matter and not quote prices on their goods to any syndicate buyer without knowing what jobbers were on their lists. In that way the troubles of the past could soon be overcome. There is no question in the writer's mind but that the syndicate buyer is of great benefit to a medium class or small jobbers. By having a large number of customers a syndicate buyer is often in a position to place a large order for goods, on which he is able to get a special discount, and in that way can place a medium priced jobber on the same basis as the largest jobber in the country.

### Combining Orders in the Purchase of Goods.

*To the Editor:* It is mighty hard to be consistent in this world. We notice that the manufacturers are very willing to combine to get higher prices from the dealers, but they are filled with horror if the dealers combine to get lower prices from the manufacturers. When manufacturers combine for any purpose we have a faint suspicion that they pool their purchases, and then argue that collectively they are entitled to lower prices than they get individually. If that principle works with manufacturers there is no reason why it should not work with dealers.

The trouble is we are all engaged in the great game of chasing dollars, and no one enjoys seeing the dollar for which he is reaching slip through his fingers into the hands of the other fellow.

NEW ENGLAND.

### A Correspondent's Inquiry.

*To the Editor:* We would like to have the opinion of your readers on the following:

Some time ago we ordered some goods from a paper firm in which was one item of 50 pounds Roofing Caps. They shipped all the goods excepting the Caps. Two weeks later we ordered some more goods and instructed them to be sure and ship the Caps along, which were on back order. Again the Caps were omitted and no explanation. In consequence, as damage we deducted 50 cents on invoice, as they were worth that much more than the price we bought them at. Was this right?

Phelps, Straw & Co., wholesale and retail Hardware, Wilkes-Barre, Pa., are now occupying enlarged premises, which include their old building 8 North Main street and buildings Nos. 4 and 6, which they have added. The frontage is 63 feet and depth 120 feet, five stories. The capacity of the concern has thus been increased 50 per cent. When everything is completed it is expected that the store and its fittings will be unsurpassed by any in the Hardware trade in the State. The lines carried are Heavy and General Shelf Hardware, Mine and Mill Supplies, Household Goods and Wood and Willow Ware. The territory covered by the house includes part of New York State, Northern New Jersey and Pennsylvania. Business during 1902 was prosperous, and prospects for this year are regarded as excellent.

## DEATH OF GEORGE H. CHATILLON.

THE many friends and acquaintances of George Henry Chatillon will learn with regret of his death at his city residence, 14 East Eightieth street, New York, Monday, January 19, after an illness of several months.

Mr. Chatillon was born in New York, August 11, 1848, and has been actively connected with the business of John Chatillon & Sons since he left school about 1868. In 1872 he and his brother, John P., were admitted to partnership with their father under the style of John Chatillon & Sons. On the death of his brother George H. Chatillon became the sole owner of the business, which was then organized as a stock company and of which he became president.

Until his health became impaired shortly after his brother's decease ten years ago, and which was accentuated by the last fire in their factory in 1898, Mr. Chatillon was an exceedingly hard worker, and to his gen-



GEORGE H. CHATILLON.

ius as an organizer, his great executive abilities and capacity for effective work is attributed the success of this representative house in the field they occupy. Mr. Chatillon was energetic, enterprising, farsighted and of a genial and kindly disposition. Even in later years and with impaired vitality the amount of work he would accomplish in two or three hours on such days as he would go to the office was remarkable. Mr. Chatillon was thoroughly absorbed in his business, taking great pride in shaping its policy, spending the bulk of what time remained in the pleasures of domestic life surrounded by his family, to which he was devotedly attached; a model husband and father. He is survived by a widow, three sons and three daughters. Two sons, George E. and Ralph T., are actively engaged in the business, the former being vice-president of the company, while the younger son is still in college.

Mr. Chatillon was not what is usually understood by the term clubman, he preferring to spend his leisure time at home surrounded by his family, but he belonged to the Liederkranz and other German societies, and was included in the membership of the Metropolitan Museum of Art, Museum of Natural History and Hardware Club.

CHICAGO HANDLE BAR COMPANY, Chicago, Ill., announce the death of George W. Webster, president of the company, at Los Angeles, Cal., on January 10. Mr. Webster's illness was of short duration and he passed away very suddenly from an attack of pneumonia. While Mr. Webster's loss is very much deplored by the company, they refer to his methods as such that every department of the business is thoroughly organized and under competent heads, and its operation will in no way be affected as a result of his death.



## A MECHANICAL DISPLAY.

A STRIKING display was made in the window of C. Magnussen, Lyons, Iowa, last Labor Day, when the country fair was being held in that town. As shown in Fig. 1 the display was divided in two parts. The right hand section typified Lyons in 1852, and the left side stood for the progressive place it is to-day. On the right side was placed a miniature log cabin grist mill

Lyons in 1902 was placed a modern saw mill, which was kept in full operation. The power was furnished by a 1-40 horse-power steam engine. As shown in Fig. 3 this was connected to a shaft which operated the circular saw and log carriage. The log carriage was made of 1 inch square lumber and four  $\frac{3}{4}$ -inch Pulleys served as wheels. These ran on a track made of Yard Sticks. The carriage with its log ran back and forth so that the Saw passed through a cut in the log making it appear

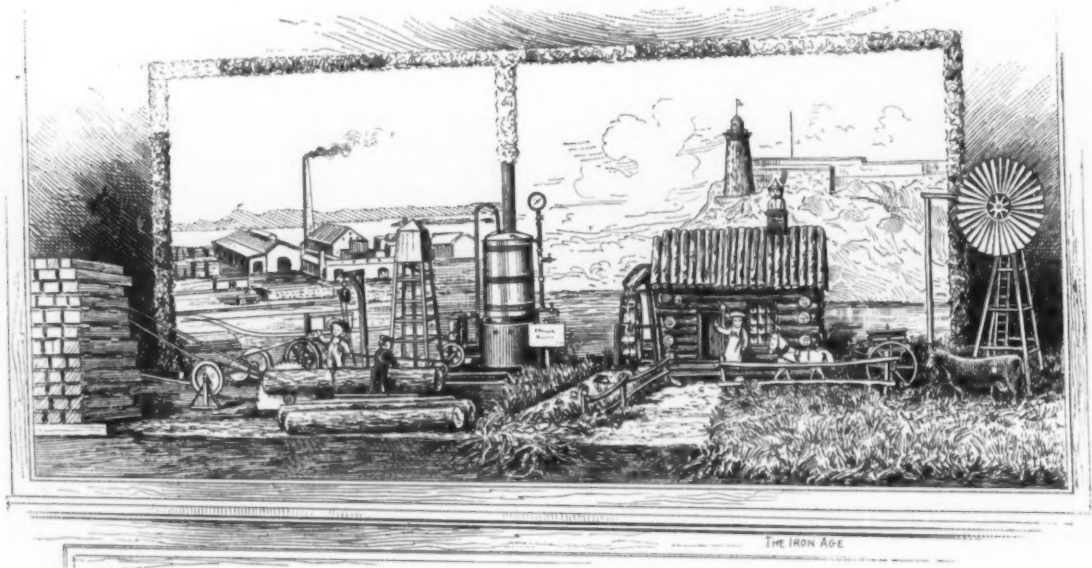


Fig. 1.—A Mechanical Display.

with its water wheel operated by a stream of real water. After leaving the wheel this formed a small river which flowed in a bed of Roofing Tin, in which were placed many small stones. At each revolution of the

as though the log were being sawed. A lumber pile and lumber carts were shown, and a few dummies were placed on the machine. Sawdust and a few cut logs were scattered in the foreground. The background for the entire window was a water color painting of one of the local mills and showed the Mississippi River, the bluffs, &c. The display attracted much attention, and received flattering compliments and press notices.

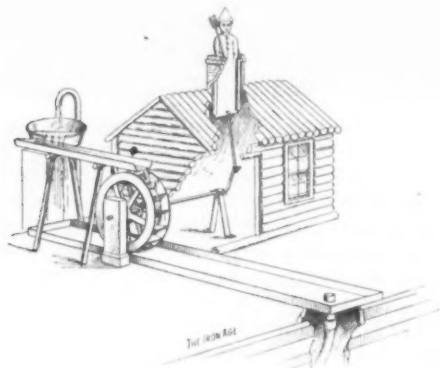


Fig. 2.—The Grist Mill.

wheel a small chimney sweep played peek-a-boo with people on the street. The detailed construction of this apparatus is shown in Fig. 2. From the old grist mill ran a road of yellow sand. This road was fenced in with an old style rail fence. In front of the mill was

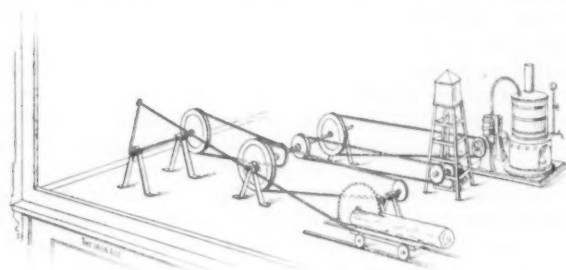


Fig. 3.—The Saw Mill.

a pasture lot, the grass being made of excelsior dyed green. A man, team of horses and cow helped to make this scene appear more realistic.

In the left section of the window which represented

## CALENDARS, &c.

CAPEWELL HORSE NAIL COMPANY, Hartford, Conn.

WASHINGTON COAL & COKE COMPANY, Dawson, Pa.

F. L. SMITH & Co., Grinding Machinery, 80 William street, New York.

JOHN T. DONAHUE & Co., manufacturers of Blocks, Pumps, &c., Baltimore, Md.

ROGERS' HARDWARE STORE, retail merchants, Toronto Junction, Ont.

THE HECLA CHARCOAL IRON COMPANY, Ironton, Ohio.

THE JOHNSTON HARVESTER COMPANY, Batavia, N. Y.

THE LOMBARD GOVERNOR COMPANY, 36 Whittier street, Boston, Mass.

A. F. BARTLETT & Co., dealers in Machinery, Saginaw, Mich.

UNION HARDWARE & METAL COMPANY, Los Angeles, Cal.: Calendar in which one of their salesmen is shown on a tramp for orders, the head being changed to represent the particular salesman calling on the merchant to whom the calendar is sent.

PHILADELPHIA FORGE COMPANY, Tacony, Philadelphia, Pa.

HENRY C. WEBER & Co., Detroit, Mich.: A dainty aluminum memorandum souvenir designed to be carried in the vest pocket.

PITTSBURGH METER COMPANY, East Pittsburgh, Pa.

THE STANDARD WELDING COMPANY, Cleveland, Ohio: A small aluminum tray adapted to various uses.

ERNEST LAW & Co., Philadelphia: Pig Iron, Iron Ores, Coal, Coke, &c.

ALMON H. FOGG & Co., Houlton, Maine: Wholesale and retail Hardware merchants.

TRADE WINNING METHODS.

This department will contain a description of approved methods of bringing customers to the store by means of newspaper advertising, circulars and such special expedients and methods as are found useful by enterprising and progressive Hardwaremen.

A cordial invitation is extended to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

A QUARTER-CENTURY GREETING.

WE give below the copy of a greeting to his customers which was sent out last Christmas by N. O. Waymire of Garfield, Kan.:

“On Earth Peace, Good Will Toward Men.”

A QUARTER OF A CENTURY.

When there seemed a probability that the business would survive its majority, it was with a feeling of gratitude to the Wholesale House that has trusted, and the customer who had paid, that some appreciation should be shown them.

Like the poor family who took a donation and got their pictures taken for the donors, a picture seemed the correct thing.

And that might have actually happened but for a chance look in the glass while combing hair in the absence of a valet. Now that a quarter of a century has come and gone, it is only right and proper that a more acceptable and substantial offering should be made; this Souvenir commemorating the 25th Christmas is not a “Coin of the Realm,” but a coin from the mint of friendship. It represents many of the best years of a life time. While it seems a long time as one looks back twenty-five years, to look forward seems



much longer. Owing to various leap years and sundry other things that would tend to make the calculation inaccurate, and the fact that no one would read it, the number of months, weeks, days, hours, minutes, etc., are omitted.

One thought may profitably be kept in mind: Act promptly to-day, do all its duties, do not miss its enjoyments, for to-morrow may never come, and the combined wealth of the universe cannot buy back one moment of yesterday. Yesterday, to-day and to-morrow is all there is of man, or Creation. May this coin keep you from being hoodooed, flim-flammed, or buncoed. May it always, when in your pocket, have plenty of other coins for companions. When out of your pocket, may it remind you of the flight of time, and the pleasant relations that have existed between us; that it may bring you a Merry Christmas, and ever be a mascot, bringing you health, happiness and prosperity, is the earnest wish of

*Respectfully,  
N. O. Waymire*

December 25, 1902.

The coin of the realm referred to in this genial and interesting circular is represented in the accompanying illustrations. This token will doubtless be valued by Mr. Waymire's customers and friends.

A TRADE WINNING CATALOGUE.

L. G. Mattison of Newark, N. Y., distributed an illustrated catalogue among his retail customers which he states was certainly a trade winner. It was 6 x 8½ inches in size and contained about 50 pages. In referring



Fig. 1 —From Mattison's Almanac (Reduced).

to the catalogue he remarks that the only merit claimed for it was that it did not contain all shop talk. The little nonsense and the pictures would, it was believed,

L. G. MATTISON'S CATALOGUE, NEWARK, N. Y. 29

Latches, Cupboard	Lemon Squeezers	Locks, Desk
" Mort. Knob	Level Glasses	" Drawer
" " Night	Levels	Mortise Dead
" " Sliding	" Carpenters	" Sliding
Door	Lifters, Transom	Door
" Store Door	Lifts	" Store Door
" Rim Knob	" Sash, Flush	" Pad
" " Night	" Hook	" Run Dead
" Screen Door	Lines	" Store Door
" Thumb	" Chalk	Dead
Lawn Mowers	" Wire Clothes	" Knob
" Sprinklers	" Masons	" Sash
Lead Pipe	Loaded Shell	" Trunk
Lead Pencils	See Ammunition	" Wardrobe
Leaders	Locks	Lumber Pencils
" Cattle	" Box	Lunch Boxes
" Dog	" Chest	Mallets

**Salad for luncheon**

means meat to be chopped—perhaps half a dozen other things—you know all about that. **The old way** was to use chopping bowl and knife, a long and tiresome operation.

**The new way** is to use Sargent's Gem Food Chopper, a little machine that does better work than the chopping bowl and knife, does it quickly and quietly, lessens labor, saves time, and makes housework a pleasure.

It chops all kinds of foods in coarse, fine or medium pieces, without tearing, squeezing, mashing or grinding. easy to operate, easy to clean. The steel cutters cannot break.

You can't afford to be without it.

**L. G. MATTISON.**  
13 Main Street Newark.

Fig. 2.—A Page from Mattison's Catalogue (Reduced).

keep a large proportion of the issue alive for a long time, whereas if it contained shop talk only, 30 days after the catalogues were distributed hardly one could be found in existence. Following the introduction, an exterior



view of the store and a picture of the genial proprietor were the 12 signs of the Zodiac shown, reduced in size, in Fig. 1. The opposite page was devoted to some humorous original remarks relating to the movements of the heavenly bodies, "Helps to Youthful Astronomers," and "Information Regarding Eclipses for 1902." The book was copiously illustrated showing streets and prominent buildings in Newark, and views of Sodus Bay. Running through 30 pages or more was a list of goods which are kept regularly in stock. A portion of each of these pages was devoted to the list, and the remainder to illustrations of goods as shown in Fig. 2, or to views. By this arrangement patrons of the store assimilated considerable of the business with the pictorial features of the book.

### AN ATTRACTIVE NEWSPAPER WRITE UP.

THE Hardware merchant who does an average amount of advertising in the local papers can, as a rule, get considerable valuable publicity through write ups in the news columns. The editors of papers will usually give these to good advertisers gratuitously, but in order to get them it is generally necessary for the merchant to prepare the matter he desires printed. In doing this care should be taken to write something which will be of interest to the readers of the paper, and to write it in such a way that it appears as news and not as an advertise-

The Berg Hardware Company of Townsend have put our editor under lasting obligations by sending over one of their matchless pieces of kitchen furniture, a St. Clair range. This is a most remarkable stove. It is arranged for wood or coal, a quick fire or a slow one. You can keep fire in it equal to a Wilson heater or you can make a fire and bake hot biscuit in twenty minutes. It is a wood saver and a provision saver also as it never burns a roast. Its baking oven is simply superb and the household of the printer will ever remember the Berg Hardware Company of our neighboring metropolis. However, while exulting over this great cooking machine, so superb with warming attachments and conveniences the thought crossed our mind what are we going to cook. Editors seldom do their roasting in an oven and seldom have use for a warming oven, as conditions generally make it pretty hot for them, but while contemplating this matter the genial Mr. Phelps happened around with a fine mess of venison, and our neighbor, W. T. Ford, contributed a jack rabbit, so we are hooked up for Thanksgiving, and to be provided more than one day ahead would be more than the average editor could stand. However, our friends within reach of Townsend will make no mistake in investing in a St. Clair range.

An Attractive Newspaper Write Up.

ment on a free puff. Many of the editors of country papers dislike to write more copy than they are compelled to, and are generally willing to accept good interesting matter which will help fill up the paper. The accompanying illustration is a reproduction of a decidedly novel write up, which the editor of a Western paper gave the Berg Hardware Company, Townsend, Mont., some time ago, and it was prepared by the editor of the *Rocky Mountain Husbandman*, on suggestion of the Berg Hardware Company, who are constant advertisers in the paper. Many good advertisers would consider a write up of this character to be of even greater value than a large display advertisement.

### CULTIVATING JOBBING TRADE.

NORRIS & LORING HARDWARE COMPANY, Cedar Rapids, Iowa, have sent out under date January 1 a map of Iowa, in which they emphasize the position of Cedar Rapids and indicate by concentric circles the distance of towns within 150 miles. At the same time, for the convenience of their customers, they give a table of freight rates in force in Iowa in less than car lots, for first, second, third and fourth class goods for varying distances up to 150 miles. It also contains a statement of the population of the different towns and cities. The

method in this case is illustrative of the advantage which is possessed by the jobber whose business is mainly confined to the territory within convenient reach.

### A THANKSGIVING ADVERTISEMENT.

THE accompanying cut, reduced in size, represents an advertisement used by Wm. Black & Co. of Rutherford, N. J., with very favorable results. Regarding their advertising methods the firm advise us that they have no set plan, except that they state in every advertisement what they can and will do, never exaggerating, and being careful not to misrepresent anything they advertise. They find that when they adver-


**Dealers in Hardware and Furniture.**


**38 Park Avenue, Rutherford, N. J.**



### Things Needful for Thanksgiving Day

We have the largest and most varied assortment of goods necessary for Thanksgiving that you can find anywhere, and the cost is low, considering the quality of the goods. We have a varied assortment of Roasting Pans, Knives and Forks, Tea and Table Spoons, Dinner Sets, Glass Sets, Water Glasses, Champagne Glasses, Tables, Chairs and Rugs; also the Polish to finish the woodwork in the room.

If you will leave it to us, we can arrange a room that will be not only pleasing to the eye, but thoroughly comfortable as well.

A Thanksgiving Advertisement.

tise to give something free with purchases it increases their sales very materially. This they did on their eleventh business anniversary, giving a handsome present with every purchase amounting to \$1 or more. They give more than their profits on some sales, but on the average they always make a small profit. The main object is to get the people in the store, and from this they derive the benefit of "giving something for nothing." The people come to the store, see the stock, and if they are not ready to purchase at the time, they learn where to go when they want to buy.

### A RHYMING ADVERTISEMENT.

The following poetical advertisement, relating as it does to Binder Twine, while somewhat late for the present season, illustrates a method adopted by Shurte & Van Steenberg. It will, however, be of interest as suggesting what may be done in this direction:

Harvest time is drawing nigher,  
Binder Twine is goin' higher,  
But we bought the Twine, you know,  
When the price was pretty low,  
For fear it wouldn't be so cheap  
About the time you ought to reap;  
So we're fixed this harvest time  
To sell you lots of Binder Twine.

We have all kinds of summer Stoves,  
Refrigerators and Rubber Hose,  
Lawn Mowers and Rakes at various prices,  
And Washing Machines of many devices,  
Fishing Tackle, Ice Cream Freezers,  
Hammocks, Churns, and Lemon Squeezers.  
Oh! yes, please bear in mind  
We fix up Stoves of any old kind.

### TRADE ITEMS.

**BROWN & WALES COMPANY**, 69-83 Purchase street, Boston, Mass., importers of and dealers in Iron and Steel, Heavy Hardware, Metals, Plumbers' Supplies, &c., have incorporated their business under Massachusetts laws as the Brown-Wales Company, with John G. Brown as president and W. Q. Wales as treasurer. There will be no change in the management of the business, the incorporation having been made to insure its permanence and to afford an opportunity for employees to become financially interested if they so desire.

**THE PUEBLO ORNAMENTAL WIRE & IRON WORKS**, Pueblo, Col., have begun business at 112 West Fifth street, manufacturing Artistic Iron, Wire and Brass Works, Bank and Office Railings, Window Guards, Wrought Iron and Wire Fences, &c. W. H. Bigwood is the business manager, while the manufacturing department is under the supervision of D. Wm. May. The company have begun operations with a force of 12 to 15 men.

**THE SIOUX CITY IRON COMPANY** is the name which will be adopted in the near future by the Chas. E. Faeth Company of Sioux City, Iowa. The announcement was made at a recent banquet given by the management to the employees of the company, at which time resolutions of regret were adopted because of the retirement of Mr. Faeth from the management. Under the direction of C. B. French, Jr., the present general manager, who succeeded Mr. Faeth, the business of the company, has been and will be continued without radical change, other than in the way of expansion, it having been determined to increase the facilities during the present year by enlarging the working force in the various departments to a considerable extent. The business during 1902 is reported to have been the largest since the organization of the company. H. A. Faeth has been placed in charge of the buying department, T. F. Burns has been made manager of the sales department and J. C. Richards of the carriage trimming department.

**THE RICHARDS MFG. COMPANY**, Aurora, Ill., announce that they have made arrangements with the Richards & Sencenbaugh Mfg. Company of Aurora to control the sale of the entire output of Door Hangers and Hardware Specialties manufactured by the latter company. The Richards Mfg. Company is the outgrowth of the association of J. H. Pease, H. O. Spencer and W. H. Fitch, previously connected with the Wilcox Mfg. Company, and O. A. Staley of the Richards & Sencenbaugh Mfg. Company; John H. Pease being president; O. A. Staley, vice-president; H. O. Spencer, treasurer, and W. H. Fitch, secretary. The traveling selling force previously employed by the Richards & Sencenbaugh Mfg. Company, have been transferred to the new selling company. A catalogue covering the line of Door Hangers and Hardware Specialties will be issued March 1.

An unusually neat and attractive list of manufacturers of Hardware and Hardware Specialties has been issued by John A. Gregg of Burlington, Iowa, manufacturers' agent, who in this way solicits mail orders and inquiries in the lines which he represents. The book also contains blank sheets for memoranda.

At a meeting of the Tri City manufacturers and jobbers of Implements, Vehicles and Hardware, the following Executive Committee was selected to arrange for the entertainment of the Iowa Retail Implement Dealers' Association, which meets in Davenport, December 1 to 4, 1903; J. W. Bettendorf, secretary Bettendorf Axle Company, Davenport; W. E. Pheris, manager Stearns Paint Mfg. Company, Davenport; L. J. S. Greene, sales manager Red Jacket Mfg. Company, Davenport; F. A. Head, vice-president Rock Island Plow Company, Rock Island; C. S. McDaniel, secretary Rock Island Buggy Company, Rock Island; W. A. Rosenfield, president Moline Wagon Company, Moline; J. W. Good, vice-president Deere & Mansur Company, Moline. The matter of the entertainment of the dealers, the securing of railroad and hotel rates and other matters, will be in charge of this committee. The committee will hold a meeting in the near future, at which time an elaborate programme of entertainment and other matters will be decided upon.

**CHAS. E. FAETH**, formerly president of the Chas. E. Faeth Company, Sioux City, has purchased the entire capital stock of the Massey Iron Company, Kansas City, and has removed to Kansas City and assumed active management of the business. The capital stock of the Massey Iron Company will be materially increased, the members of the firm of Nichols, Dean & Gregg of St. Paul becoming financially interested in this business, and they will endeavor fully to occupy the field tributary to Kansas City. The Massey Iron Company have no connection with any other Missouri River house in similar lines, being an entirely independent concern.

At a meeting held at Muncie, Ind., on January 8, the Indiana Sash Weight Manufacturers' Association was formed, the officers elected being Ewald Over of Indianapolis, president, and Chas. E. Hanika of Muncie, Ind., secretary. All manufacturers in Indiana and Western Ohio were represented at the meeting. The purpose of the organization is declared to be to bring about closer relations between manufacturers, so that in rush times factories will assist one another in filling orders promptly, and also to facilitate the securing of a more ample supply of scrap iron.

**A. H. FUNKE**, 325 Broadway, New York, manufacturer of the Baldwin Acetylene Lamps and dealer in Bicycle and Automobile Sundries, is exhibiting at the Automobile Show in Madison Square Garden a perfected Spark Plug, which he refers to as strong and well made, as working under all conditions, while oil and soot will not impair its efficiency. He is also displaying a full line of new style Horns in various styles and sizes, for Automobiles, operated by collapsing a rubber bulb.

**THE LIVINGSTON NAIL COMPANY**, New York, having purchased an interest in and become identified with the management of the Coleman Nail Company, Pawtucket, R. I., have perfected arrangements to manufacture all their leading Horse Nails, including Anchor, New Haven, Coleman and other brands, at Pawtucket, under the cold rolled process and under the personal supervision of S. Otis Livingston. The Livingston Nail Company will market the output of the factory and solicit a continuance of the orders with which they have been favored in the past.

### W. H. SWEENEY MFG. COMPANY'S NEW CATALOGUE.

**W. H. SWEENEY MFG. COMPANY**, 66-72 Water street, Brooklyn, N. Y., manufacturers of Copper, Brass and Nickel Plated Ware, particularly of the character of Tea and Coffee Pots, Tea Kettles, Pitchers, Trays, Chafing and Pudding Dishes, Bathroom and Bar Sundries, Stove Boards and a general line of kindred goods in great variety, have just issued a new catalogue accompanied by a sheet of special prices on their line of goods.

### THE REPUBLIC RUBBER COMPANY'S CATALOGUE.

**THE REPUBLIC RUBBER COMPANY**, Youngstown, Ohio, Eastern sales department 47 Warren street, New York, issue a well printed and handsomely illustrated catalogue and price-list of Mechanical Rubber Goods. They refer to their concern as "a new mechanical Rubber factory, with practical Rubber men at the head." The product of the factory consists of Rubber Belting, Hose, Packings, Automobile and Vehicle Tires, Molded Goods and a complete line of Mechanical Rubber Goods, which are illustrated by half-tone cuts. The company state that while the capacity of the present plant is large, they have 30 acres of land with the best facilities, thus allowing for future enlargement. The freight and shipping facilities are such as to insure quick delivery of goods to any part of the country, including the delivery of express orders in one night to New York or Chicago.



## THE HARRINGTON CUTLERY COMPANY'S NEW PLANT.

**T**HE HARRINGTON CUTLERY COMPANY of Southbridge, Mass., are now installed in their new plant. The new home of the company, formerly occupied by the Southbridge Optical Company, has been thoroughly refitted and is among the most up to date establishments for the manufacture of cutlery in the country. The structure is 220 feet long and three stories in height. The front part of the first floor is elevated to the offices, including the private and general sections. Leading into the office is a large vestibule. The interior of these quarters is finished in oak and, with the polished floor, presents a decidedly neat appearance. Leading from the office on the same floor is the shipping room, where there is capacity for storing 60,000 dozen Knives. Beneath the offices is the pressroom, where power presses for the stamping and cutting out of Knives are installed. Next comes the engine and boiler rooms. Leading from the foreman's room is the largest department in the factory, the grinding and buffing department. This section of the building is 120 feet in length and here has been installed a complete new outfit of machinery. One whole side of the room is devoted to emery wheels and buffing appliances. In a room adjoining the main grinding section the finishing is done. The hardening and tempering department will be in a fire proof brick addition to the building. This branch of the work will be performed according to an original idea of the Southbridge firm and will be carried on differently here than in any other plant in the country. At present this part of the work is being done at the old Harrington factory, the new department not being complete. The new plant has a capacity for doing three times the business of the old. The company are now doing by far the largest business in their history.

## REQUESTS FOR CATALOGUES, &c.

*The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

Muckleroy & Dew, Terrell, Texas, have established a branch store under the same style at Okemah, Ind. Ter., and they will be glad to have the trade send catalogues, price-lists, &c., to the new house. They have erected a stone building 50 x 120 feet, and will handle a general line of Hardware as well as Agricultural Implements.

H. M. Atwater & Co., Norfolk, N. Y., are adding a stock of Hardware to their other lines and will appreciate copies of catalogues, price-lists, &c.

R. E. Stephenson, formerly of Covington, Ga., where for the past five years he has been in the employ of James R. Stephenson, Hardware merchant, has opened up a stock of general Hardware, Stoves and Farm Implements, under the style of Stephenson-Roberts Company, at Sparta, Ga., with a capital of \$4000 paid in. The new firm will be pleased to receive catalogues, price-lists, &c., relative to the above lines.

Hoop Hardware Company have just started in business at Newhaven, Pa., handling Hardware, Farming Implements, Sporting Goods, Stoves and Tinware, and will appreciate copies of catalogues and other printed matter pertaining to these lines.

Stokes-Evans Hardware Company, wholesale and retail, Macon, Miss., have added a general repair shop to their business, and will be pleased to receive catalogues and other printed matter from manufacturers of Guns, Pistols, Sewing Machines, Typewriters, Locks, &c.

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## BRITISH LETTER.

Offices of *The Iron Age*, HASTINGS HOUSE, }  
NORFOLK ST., LONDON, W. C., Jan. 10, 1903.. }

### The British Hardware Trade in 1902.

**M**OST Hardware manufacturers in this country will have no special fondness for the year 1902. From beginning to end it has been an uncomfortable, niggling, irritating sort of year. Catalogue prices have shown marked reductions, while the cost of manufacture has remained at the high rates obtaining in the prosperous years of 1899 and 1900. The volume of trade transacted was probably in excess of the year 1901, but there can be no doubt that it proved much less remunerative. In going over my weekly comments during the last year I find that almost invariably my weekly market report has been pessimistic. A full review of the facts and figures relating to the trade as a whole makes good my weekly comments. Not only did the home trade meet with a serious setback, but some of the best Hardware markets were also down in the dumps, notably Germany, Austria and Russia, while the Australian drought seriously restricted business with those two colonies. Before proceeding to the more statistical portion of this annual report I propose to make some comments upon the special departments of the Hardware and metal trades.

#### Tools and General Hardware.

The home market throughout the year has been dull both in Tools and Hardware. South American orders for Cultivating and Edged Tools have not been up to the average, mainly for two reasons—(a) increased activity of German and American competition, and (b) bad financial situation in the Argentine. In Cuba, Porto Rico and Canada American Tools are rapidly supplanting the British article. In miscellaneous Hardware the home market has been much affected by German competition. The most valuable and progressive markets proved to be South Africa, India, Australasia and Germany. Large shipments, too, were made to Russia, Holland, Belgium and the United States. There has not been so much doing in Agricultural Weighing Machines and Australian orders for Platform Machines have disappointed expectations, but Counter Balances and Butchers' and Grocers' Scales have been in good request, while there has been an excellent export trade done in Spring Balances and Steelyards. Automatic Weighing and Packing Machines are in growing request by wholesale traders. The Cut and Wrought Nail trades have suffered by the slackness of the building trade, but the demand for the coronation celebrations in various parts of the country helped in some degree to rectify this. Makers of Nuts, Bolts, Screws and Rivets have, on the whole, done fairly well, but they have all at one time or another had slack periods, and all at one time or another have found it necessary to make for stock. There has been a revival in the demand for Rotary Fans, while larger purchases have been made of Anvils and Vises, the latter largely in connection with the requirements of the United States Government. For naval iron work the demand exceeded expectations. Cables and Anchors were in good request, both on Government account and for the leading shipping lines.

#### Iron Foundry and Hollow Ware.

The following local comments upon iron foundry and Hollow Ware seem to me accurately to state the condition of that department of trade during the year:

The scarcity and high price of foundry pig this year, due largely to the special requirements of the United States, has placed iron founders at some disadvantage, owing to the difficulty of obtaining a corresponding increase of price from buyers of the finished articles. This remark applies more particularly to heavy goods, such as Gasometers, Water Pipes, Piers and Machine Castings, in which lines iron founders have been fairly busy throughout the year. Since the close of the Boer war there has been a partial revival of demand for Cast Hollow Ware, Three-Legged Pots, &c., but the Cast Hollow Ware trade as a whole is not a progressive branch, ow-

ing to the increasing severity of the competition in Wrought Hollow Ware, at all events in Pots, Kettles and Saucepans. Stamped Steel Hollow Ware continues in growing request and some of our makers are doing a large turn over in Enameled Goods. Castings for builders' and sanitary work are in active demand, and the makers of castings for Fenders, Curbs, Stove Grates, Ranges and Stable Fittings have been tolerably busy since the summer. Light iron founders also have been well employed on railway and telegraph work. The demand for Wrought Iron Hollow Ware, both plain and galvanized, in the shape of Buckets, Bowls, Tea Kettles, Water Cans, Dust Bins, Coal Hods and Sanitary Appliances, has been quite up to the average, and some heavy lines for export—one for 15,000 Buckets for South Africa—have contributed to the activity of this branch. One of the chief local amalgamations of the year, that of Baldwin's with Knight, Crowther & Co. and Wright & Butler, with a capital of £900,000, was announced early in the spring.

#### Brass and Copper Trades.

In the brass and copper trades great disorganization was created by the uncertainty of the copper market. In 1901 the year's profits were marred by the sudden collapse in the price of copper, leading, as I remember writing in *The Iron Age*, to adverse financial reports by the local brass and copper founders who had to value stock at prices which completely wiped out profits. It will be remembered that copper fell in a few months from £70 to less than £50 per ton. Since then there has been no permanent rally; indeed, the price of copper at the beginning and the end of the year shows no great fluctuation. But buyers have been nervous, and this had an unsettling effect. On overseas account there has been a distinct improvement in the wrought copper trade, notably to Turkey and India. The decline in engineering and shipbuilding trades necessarily affected the demand for seamless brass and copper tubes, but the increasing demand for copper for electrical purposes had a good effect on the copper tap and wire branches, and to some extent on the strip trade also. The cabinet and general brass foundry trades have been dull, the only exceptions being the makers of brass cocks, taps, unions and hydrants. The demand for high-class Table Lamps fell off seriously, but cheap Oil Lamps sold well, and throughout the year there was a well sustained demand for gas fittings, chiefly brackets, notwithstanding the spread of electric lighting. Fair employment was obtained in the brass fender and hearth furniture trades, and there was some recovery in the brass and composite bedsteads, side by side with the revival in wooden bedsteads.

#### Arms and Ammunition.

The end of the South African War naturally saw a complete slackening in the manufacture of Arms and Ammunition. Up to March of last year the Birmingham Small Arms Company were sending Rifles to the War Office at the rate of 2000 a week. Since the conclusion of the war the weekly production has been reduced to 1200 weekly. There are no military contracts at the present moment being given out, and no doubt the Small Arms Company will follow their previous habit of turning to the manufacture of Cycle Components. Ammunition manufacturers who fall back on the sporting trade and other branches will not feel the loss of the war so keenly as the Military Rifle makers. The number of Firearms shipped during the year was 84,827, compared with 111,333 in the year 1901, and 95,306 in the year 1900. These Firearms were valued f.o.b. at £214,253 last year, £315,709 in 1901 and £193,838 in 1900. The total definitive proofs reported at the last meeting of the proof house was 355,270, a reduction of 34,998, or 9 per cent., compared with the previous year. Of this number nearly one-third were African, mostly loaders, and another one-third represent pistol proofs. It is interesting to note that the high water mark in the Birmingham Gun trade was reached in 1863, with a total of 1,100,000 during the American War. Since then the tendency has been downward, with revivals in the years of the Austrian and Franco-German wars.



### The Cutlery Trades.

From Sheffield comes the following report of the Cutlery trades: There was a good deal of complaining in the course of the year of the condition of the Cutlery trades, but perhaps sufficient consideration was not given to the increased means of production of many of the cheaper qualities. It is the opinion of some in the trade that, taking it all around, there has not been so much to grumble about, a large weight of stuff having been sent away. The demand may not have been as brisk as in some recent years. In the last few weeks the Case Carver trade looked up well, and best Table Cutlery was in increased request, chiefly for Christmas presents. The Spring Knife branch was active all the year, not so much on account of an increase in orders as owing to the scarcity of workmen to execute them. Indents that were received early in the year were on the books at the close unexecuted, and some firms have work on hand to carry them a long way through the new year. Some makers say they could sell twice as many Spring Knives as they are doing if they could only get them made. The Scissor trade was fairly good all the year, especially for such as were warranted Sheffield made; and some firms did very well in Razors, but the outlook is not encouraging.

### Ivory, Stag, &c.

The demand for Ivory throughout the year for Cutlery purposes was fairly good. It was during the first six months below the average, but this was made up by an increase in the last six months. Had not the London trade been spoiled by the unfortunate postponement of the Coronation, there is reason to suppose that the sales would have been quite equal to expectations. The Ivory handles most in demand were of the medium quality, the very commonest having had for a considerable time a very slow sale. The Ivory which comes to hand now is by no means of as good quality as that received down to a quarter of a century ago, and consequently the best class of handles are turned out in small proportions as compared with medium sorts. There have been four series of sales in the year, and prices advanced slightly at each sale, but the cutters, being anxious not to interfere with trade, made no attempt to advance their lists. There is a probability that prices will continue to stiffen if the American demand keeps up, and if the Congo Company severely restrict the supplies they put on the market. The demand for Ivory by America is an ever increasing factor in the trade, and it shows no signs of abatement. The cutters over there are using almost all descriptions of Ivory, and are now going in for small teeth, which they formerly scarcely touched. The demand for Ivory for piano keys is increasing, and now takes the lead in quantity required for any one purpose. The following statistics show how importations have varied in the last few years:

	1902.	1901.	1900.	1899.	1898.	1897.
Imported January 1 to November 30.....	276	215	255	268	253	277
Deliveries ditto.....	238	249	265	284	284	259
Stock, November 30.....	82	43	70	80	104	148

The demand for celluloid for Table Cutlery was very good throughout the year. This was accounted for somewhat by the fact that it is largely taking the place of other hafting material, such as commonest Ivory and best bone.

Stag horns have been scarce, owing to the free buying for America, where, as rough material, they are admitted duty free. This has led to the placing on the market of many imitations of stag. Some of these are made from cut waste, or paper, or wood, and one of the best of them is at present in exceptionally heavy demand. The handle is pressed from buffalo horn into various patterns representing royal stag. It comes out at half the cost of best stag, and in polish and general appearance is difficult to distinguish from the genuine article. It is made in scores of patterns, and has already met with much favor. Bone handles have been cheap, and have gone off fairly well.

### Silver and Electro Plated Goods.

The trade both in Sheffield and Birmingham in silver, electro plated and fancy goods proved from begin-

ning to end most unsatisfactory and disappointing. It was hoped that the Coronation festivities would lead to a marked stimulation of this trade but, as a matter of fact the demand for personal and domestic ornaments fell off, and the trade became more and more contracted as the months went by. The only stimulation to the consumption of precious metals was created by the demand for war and Coronation medals, badges, &c. The cheapness of silver has had some slight effect in stimulating the demand for silver articles of ornament or utility. In table ware of the heavier kinds a formidable competitor was met with in the shape of tin or pewter. Electro plate manufacturers came off better than the silver men. They were fortunate enough in obtaining some good contracts for Spoons and Forks for the Admiralty. The London demand for silver and electro plate goods all the year was much below the average, and as London is the great mart for these things it follows that the trade must have felt a depressing effect.

### Britannia Metal Goods.

The Britannia metal trade was seriously upset by the Sheffield strike. From the middle of March until August 21, when an agreement was reached, the strike continued. As a matter of fact, however, trade was in a most depressed condition, and the masters felt but little inconvenienced by their shops being closed. Work has been steady since the men resumed, and there has been no shortage of employment. At the same time the Britannia metal trade may be considered to have been bad during the year.

### Cabinet Case Trade.

The cabinet case trade in 1902 was the worst on record. Not only was there a scarcity of orders, but there was a strong tendency to cut prices, and no understanding among the manufacturers. It is generally assumed in the Sheffield district that not a single firm in the cabinet case trade will be able to show a fair profit on the year's working. One thing necessary in this trade is for the manufacturers to come to an understanding and to associate for trade purposes.

### The Opening of the New Year.

The new year's trade has opened in a fairly cheerful spirit, but new orders are always scarce in January, with the exception of certain quarter day orders, which affect the heavy industries more than the lighter trades. The depression on the Continent continues, and in consequence the export Hardware trade is adversely affected. But in South America, and especially Argentina, the situation is more promising than it has been for many years. It is hoped that a large business will be continued with the Transvaal and Orange River Colony, but I adhere to an opinion previously expressed that when the immediate wants of those communities have been supplied there will be a stringency of money and a demand for long credit which must have a seriously depressing effect. The Chinese trade is a steadily improving factor, and Indian orders are coming in for mining and other machinery, Locomotives, Galvanized Sheets, Steel Rails, Wrought Copper, Yellow Metal, Rolling Stock and Edged Tools. The every nature of these demands points conclusively to a resuscitation of the Indian market, and I again urge upon American exporters the importance of making themselves fully acquainted with the requirements of this great country and potentially immense market. Australasia is now recovering in some degree from the evil effects of its drought, and with a sense that the tariff will become permanent business will doubtless be regularized. Taking a general view, therefore, it would seem that there are a number of valuable markets over the earth's surface from which will come a demand for Hardware and Metal Goods. On examining home affairs, however, it is difficult to resist the conclusion that we are experiencing in a number of ways the evil results of heavy war expenditure, and what is even as serious, the growing expense of heavy military and naval establishments. There was a time, not so long ago, when Great Britain prided itself upon being exempt from the heavy war burden that weighs down the countries of Europe. Recent events have precipitated the British Government

into excessively heavy military and war charges, and the end of this, so far as its influence upon business is concerned, no man can yet see. Certain it is that there is a distinct slackening in the home demand, and if, coupled with this in the near future, we are to have a more acute competition with American products, then I doubt not that the trade depression which we all feel to be looming not far off will descend upon us. Anxious eyes, both in the heavy and light trades, are turned toward America, for the feeling prevails that immediately the American home demand slackens American output will not be decreased but will find outlet in other markets. And the very first market Americans come to is Great Britain. Still British manufacturers, merchants and retailers have cause to be grateful for a prolonged period of prosperity—a period historically longer and more extended in every way that we have ever experienced before in this country.

#### Hardware and Metal Imports from America.

I have kept a record of British imports from America during December, and even though it is somewhat lengthy it will well repay study. My impression is that a close examination of these returns will indicate a greater variety of American goods coming to this country than was the case three, six or nine months ago.

#### DECEMBER IMPORTS.

6 Artillery Wagons  
1 Automobile.  
195 pkgs. Agri. Implements.  
8 rolls Belting.  
44 pkgs. Bath Cabinets.  
400 reels Barb Wire.  
24 cs. Book Cases.  
560 cs. Brass Shoe Wire.  
4 Boilers.  
75 bdls. Bars and Rods.  
53 cs. Bolts.  
238 crts., 20 cs., 57 pkgs. Bicycles and parts.  
52 cs. Bolts and Nuts.  
223 pkgs. Blowers and parts.  
7 pkgs. Brass Goods.  
5 pkgs. Brassware.  
31 cs. Copper Paint.  
100 cs. Copper Goods.  
50 cks. Curtain Poles.  
140 cs. Cartridges.  
38 pkgs. Carpet Sweepers.  
56 pkgs. Carbon Wheels.  
46 crts. Car Seats.  
112 crts. Churns.  
7 cs. Copy Press parts.  
12 crts. Corn Shellers.  
224 cs. Copper Vessels.  
19 pkgs. Copper Wire.  
116 cs. Cash Registers.  
32 bgs. Corundum Ore.  
12 cs. Clothes Wringers.  
131 bdls. Copper Matte.  
50 cks. Crude Metal.  
88 bxs. Cold Rolled Steel.  
1480 pkgs. Clocks.  
460 cs. Castings.  
5 bdls. Old Copper.  
7859 bars, 2841 pkgs, 18 cs., 1145 ingots Copper.  
286 coils Copper rods.  
141 bxs. Electrical Machinery.  
35 pkgs. Electrical supplies.  
8 cs. Electrical Motors.  
3 pkgs. Engines.  
70 empty Iron Drums.  
200 pkgs. Emery Wheels.  
309 pkgs. Electrical Goods.  
94 pkgs. Feloes, Spokes, &c.  
9 bxs. Forgings.  
67 cs. Files.  
10 bgs. Flint.  
38 pkgs. Fittings.  
4 cs. Gas Engines.  
100 pkgs. Heaters.  
13 cs. Harrows.  
7 cs. Harrow Teeth.  
910 bdls. Hoops.  
109 cs. Hardware and Woodware.  
33 cs. Hollow Ware.  
2777 pcs. Hardware, Lumber.  
9 pkgs. Hangers, Door.  
4665 pkgs. Hard Wood and Metal Ware.  
12,279 pkgs. Handles.  
5080 pkgs. Hardware.  
295 crts. Insulators.  
2 cs. Incubators.  
44 bxs. Implements.  
60 pkgs. Iron Chains.  
1 bx. Iron Castings.  
6 bxs. Iron Pans.  
50 pcs. Iron Rings.  
18 pcs. Iron Trucks.  
13 pkgs. Iron Valves.  
33 pkgs. Iron.  
43 pkgs. Iron Pipe Fittings.  
1638 pcs. Iron Pipe.  
24 cs. Iron Bolts.  
9 cs. Iron Bolts and Nuts.  
48 cs. Knitting Machinery.  
4817 bars Lead.  
32 pkgs. Lampware.  
49 cs. Lanterns.  
113 bdls. Lamps.  
29 pkgs. Lamp Goods.  
52,549 pgs. Lead.  
10,320 pkgs. Machinery.  
26 pkgs. Machinery and Hardware.  
15 cs. Machinery parts.  
80 pkgs. Machines.  
13 bdls. Manganese.  
15 cs. Magnesia Boiler Covering.  
324 cs. Meat Choppers.  
22 pkgs. Metals.  
18 cs. Motors.  
15 pkgs. Mowers.  
4394 pkgs. Nails.  
1992 bgs. Nails, Wire.  
10 pkgs. Netting, Wire.  
156 cks. Nickel.  
224 bgs. Ore.  
166 pkgs. Paint.  
847 pcs., 5 cs. Pipe.  
19 cs. Pipe Covering.  
19 cks. Plumbago.  
264 bdls., 510 coils Plain Wire.  
150 crts. Pulleys.  
42 pkgs. Printing Machinery.  
399 pkgs. Plows.  
7 pkgs. Plows and Handles.  
8 pkgs. Plows and Poles.  
123 cs. Plows and parts.  
45 cs. Pump Machinery.  
28 cs. Pumps and parts.  
291 Radiators.  
4100 pkgs. Radiators.  
19 cs. Recorders.  
70 cs. Rivets and Studs.  
294 bdls. Rods and Castings.  
24 pkgs. Rifles.  
49 bdls. Rims.  
86 pkgs. Rims and Spokes.  
187 pkgs. Sewing Machinery and supplies.  
1806 pkgs. Sewing Machines.  
589 crts. Spokes.  
17 cs. Silver Novelities.  
1213 Slabs Dross.  
1916 bdls. Spelter Slabs.  
1127 slabs Spelter.  
1105 plates Spelter.  
310 bdls. Sleeve Rims.  
103 cs. Sweepers.  
3 cars Slates.  
130 pkgs. Skewers.  
28 bxs. Saws.  
192 Steel Rails.  
113 bxs. Shafting.  
32 Steel Plates.  
240 cs. Steel.  
70 bxs. C. R. Steel.  
32 pkgs. Scrap Brass.  
20 bdls. Scrap Zinc.  
24 cs. Scrap Iron.  
206 cs. Steam Governors.  
1 bx. Steam Carriages.  
20 pkgs. Springs, Wire.  
129 cs. Shoe Nails.  
68 cs. Shoe Machinery.  
5269 pkgs. Stoves.  
13 crts. Stoves, Oil.  
143 cs. Scales.  
689 bxs. Steel Bars.  
191 pkgs. Truck Material.  
58 pkgs. Tinware.  
4 cs. Ore Tanks.  
54 bxs. Truck Frames.  
104 cs. Tool Boxes.  
158 pkgs. Tools.  
1914 pkgs. Typewriters.  
3 cs. Thermometers.  
59 bxs. Vises.  
529,650 pounds Washed Metal.  
17 pkgs. Wire Goods.  
120 bdls. Wire, plain.  
15 cs. Wooden Handles.  
20 cs. Woodware.  
5 pkgs. Windmill parts.

10 bdls. White Lead.  
54 pkgs. Wood Pulleys.  
1553 pcs. Wrought Pipe.  
935 cs. Wringers.  
158 pkgs. Wood and Hardware.  
22 bxs. Weighing Machines.  
153 pkgs. Wheels, Spokes, &c.  
67 pkgs. Wheels and Rims.  
12 crts. Washing Machinery.  
90 Wheels, Car.

422 crts. Wheels.  
8 cs. Wire and Machinery.  
2488 rolls Wire.  
10 bxs. Yellow Metal Rods.  
82 bdls. Zinc Fiber.  
584 bdls. Zinc Ashes.  
63 bdls. Zinc Skimmings.  
1650 bdls. Zinc Oxide.  
53 slabs, 6259 bdls., 1 car Zinc Dross.

#### NORVELL-SHAIPLEIGH HARDWARE COMPANY.

THE NORVELL-SHAIPLEIGH HARDWARE COMPANY, St. Louis, Mo., are now located in their splendidly equipped building, Fourth street and Washington avenue, and will be glad to see their many patrons and friends at the new quarters. The construction and equipment of this building have been given especial thought and care, and the result is that the new home of the company is one of the very finest establishments in the country. The company have made a number of changes in and additions to their force of salesmen for 1903, as follows: D. T. Harris will represent the company in Pennsylvania, with headquarters in Pittsburgh; H. M. Owsley will cover Georgia, with headquarters in Atlanta; H. L. Chaffee will travel Minnesota, with headquarters in Mankato; R. M. Burton will look after the State of Washington, with headquarters in Seattle; L. W. Willis will take care of their Montana trade, with headquarters in Butte; H. L. Boweds will represent them in California, with headquarters in Los Angeles; R. Michelsen will have charge in Utah, with headquarters in Salt Lake City; Willis W. Pattison will circulate through Colorado, with headquarters in Denver; P. J. Settelle will cover New Mexico, with headquarters in El Paso, Texas. With the exception of Messrs. Burton and Boweds, all of the above salesmen are new in the service of the company. The company also announce the engagement of G. T. Sprake, formerly with the Simmons Hardware Company, who has become their buyer in Tools and kindred lines.

Under date of the 5th inst. the company issue a card announcing the death of R. S. Moffett, at Fort Worth, on January 4. A very graceful and appreciative tribute is paid to the memory of Mr. Moffett, who had been connected with the house as salesman for many years.

#### M'KENNA BROTHERS BRASS COMPANY, LIMITED.

LAST week the McKenna Brothers Brass Company, Limited, Pittsburgh, Pa., divided with about 100 of their employees 10 per cent. of the past year's profits. Journeymen employees who have been on the payroll during the last year received \$45 to \$70 each. It was a complete surprise to the men. The aggregate amount that the company gave to their skilled craftsmen amounted to upward of \$6000. This liberal division of profits was determined on by the action of the Board of Managers of the company a year ago, and will be continued during the business life of the company. The profit sharing ranges according to the wages drawn by the men during the year. McKenna Brothers Brass Company are a reorganization of A. & T. McKenna, and operate a modern plant at First avenue and Ross street, Pittsburgh, Pa. A. G., W. H., John A., Charles H. and T. Morrison McKenna and Charles Dick comprise the Board of Managers.

#### NICHOLSON FILE COMPANY.

DURING the year 1902 the Nicholson File Company, Providence, R. I., have made extensive alterations and improvements at their main factory at Providence, and also at their branch factories at Paterson, N. J.; Anderson, Ind.; Beaver Falls, Pa., and Port Hope, Ontario, which will materially increase the capacity of each of these factories. All of the factories under the control of this company are in full operation, and the changes that have been made, which are now practically completed, will be of immediate service to them in supplying the constantly increasing demands for their products, both in this country and abroad, and will en-



able them to maintain their reputation of making prompt shipments of all orders.

### A BOOK ON ADVERTISING.

**L**INCOLN PUBLISHING COMPANY, Provident Building, Philadelphia, have recently issued a volume entitled "Successful Advertising, How to Accomplish It," by J. Angus MacDonald. The book contains 400 pages and is provided with a comprehensive index. The matter is presented in the shape of talks on various advertising methods, advertising schemes, specimens of advertisements, type effects, &c., reference being also made to the principles underlying advertising. The questions of preparing advertisements, selecting mediums, methods of conducting sales and other features of publicity are carefully and fully considered, and throughout the book are many object lessons in the shape of advertisements and typographical displays. The contents are classified in five divisions: Ad. Building; Retail Advertising All the Year Round; Special Features in Retail Advertising; Mail Order Advertising, and Miscellaneous Advertising. The book, which is cloth bound, is sold at \$2 per copy and may be obtained from the publishers, or David Williams Company, 232-238 William street, New York.

### JACKSON SHOVEL & TOOL COMPANY.

**T**HE JACKSON SHOVEL & TOOL COMPANY, Montpelier, Ind., announce that they will be in active operation within a few days. The large plant has been fully equipped with modern Tools, including Engines, Boilers and a complete machine shop outfit. The company will manufacture Shovels, Spades, Scoops, Drain Tools, Pressed Steel Specialties and Drop Forgings. The officers are James H. Channon, president; Wm. C. Jackson, vice-president and general manager, and Harry Channon, secretary and treasurer.

### PRICE-LISTS, CIRCULARS, &c.

**THE BALLOU BASKET WORKS**, Belding, Mich.: Catalogues and price-lists relating to Wooden Baskets, in a number of styles, for a variety of purposes, also Canvas Baskets and Bags.

**THE ATWATER MFG. COMPANY**, Southington, Conn.: Supplementary sheet for catalogue of 1899, illustrating with prices their entire line of Axle Clips. This has been gotten up with care, and is referred to as correct as to sizes, dimensions and lists.

**S. R. SARGENT & SON**, Castleton, Vt.: "76" Farm Implements. An illustrated catalogue is devoted to Plows, Harrows, Cultivators, Potato Hoes, Root Cutters, Fodder Cutters, Steel Farm Wagons, &c.

**THE PHOSPHOR-BRONZE SMELTING COMPANY**, 2200 Washington avenue, Philadelphia, Pa.: Price-list No. 21 relating to Phosphor-Bronze Roll and Sheet Metal, Wire, Circles, Rods, Ropes, Ingots and Castings; also Elephant brand of Anti-Friction Metal.

**E. H. STAFFORD & BROS.**, Chicago, Ill.: Catalogue No. 21, devoted to office and library furniture. It is very complete and is profusely illustrated. The catalogue is accompanied by an illustrated folder of novelties and office supplies. On the inside cover is an index for ready reference to the articles covered.

**THE WATERLOO REGISTER COMPANY**, Waterloo, Iowa: Catalogue and price-list illustrating Hot Air Side Wall Registers, with water pans.

**EDWIN HILLS**, Plainville, Conn.: Garden Tools. An illustrated price-list and circular shows two, three and four pieced sets in a variety of styles, also Beach Spades and Snow and Sand Shovels.

**THE JACKSON MFG. COMPANY**, Harrisburg, Pa.: Steel Barrows. A price-list circular illustrates Barrows for mining, foundry, furnace, pig metal, brick, charging, &c., also Coal or Coke Wagons, Mining Cars, Wire Rope Thimbles, &c.

**MILLER LOCK COMPANY**, Frankford, Philadelphia, Pa.: Catalogue No. 19. This relates to Night Latches, Rim Dead Locks, Drawer and Chest Locks, and Padlocks.

**THE CLYDE IRON WORKS**, Duluth, Minn.: Illustrated catalogue and price-list relating to Logging Tools, Logging Sleighs and Chain, of which the concern are manufacturers.

**THE JOHNSTON HARVESTER COMPANY**, Batavia, N. Y.: Catalogue illustrating Binders, Headers, Reapers, Rakes, Tedders, Corn Binders, Harrows, Cultivators, &c.

**THE SHELBY STEEL TUBE COMPANY**, Pittsburgh, Pa.: Catalogue devoted to Cold Drawn Seamless Steel Tubing, Boiler Tubes, &c.

**J. FINLEY SMITH & SON**, 118 Chambers street, New York: Illustrated catalogue and price-list of Brushes, including Paint, Whitewash, Horse, Shoe, Floor, Shaving, &c.

**UNITED ELECTRIC HEATING COMPANY**, Detroit, Mich.: Catalogue representing a large line of Electric Heating Devices. The company have lately added to their assortment Cooking Ovens, Cooking Ranges, Griddles and Broilers, Solder Pots and Glue Pots. All of these devices are referred to as new and practically perfect.

**TUCKER & DORSEY MFG. COMPANY**, Indianapolis, Ind.: Hardware and Wooden Ware Specialties. An illustrated catalogue shows a line of Tucker's Alarm Tills, also Wood Saw Frames, Saw Bucks, Stove Trucks, Saw, Kraut and Vegetable Cutters, Towel Rollers, Hat and Clothes Racks, Lemon Squeezers, Casters, &c.

**COOPER & MCKEE**, Brooklyn, N. Y., issue an illustrated catalogue showing an entirely new line of Glass Lined Refrigerators, as well as a new line of their New Columbias and Champions. The firm have largely increased their productive capacity by putting in a new 150 horse-power engine and boiler and duplicating machines.

**THE CENTRAL TOOL COMPANY**, Jonesboro, Ind.: Scythes. The company issue a catalogue relating to Scythes, &c., in which Grass, Grain, Weed and Bush Scythes, Hay Knives, Corn Knives and Grass Hooks are artistically illustrated in colors.

**H. & F. MESINGER MFG. COMPANY**, 1801-1803 First avenue, New York: Circulars illustrating Saddles and Grips for Bicycles and Motor Cycles.

### C. HAGER & SONS HINGE MFG. COMPANY.

**T**HE C. HAGER & SONS HINGE MFG. COMPANY, St. Louis, Mo., issue a 1903 illustrated catalogue and price-list of Wrought Steel Butts, Strap and T Hinges, Hasps and Staples, Plate, Screw Hook and Strap Hinges, Washers, Barn Door Latches, Wagon Bow Staples, Fellow Plates, &c. There are 14 standard finishes of the company's Electro Plated Butts and all Electro Plated Butts can be sand finished. Other finishes include galvanized, japanned and dead black japanned. The catalogue is very complete and well arranged.

### Teddy's Rough Rider Pom-Pom Gun.

The Toy Gun Mfg. Company, 141 Clinton street, Chicago, Ill., are offering the gun shown herewith. The gun is made of nickel plated steel, with hardwood stock, all well finished. In use the soft, hollow rubber ball



Teddy's Rough Rider Pom-Pom Gun.

shown at the end of the barrel is placed in position, the trigger being pulled back just far enough to drop a cap in the slot in the barrel near the end. The caps used are giant paper caps. It is suggested that the gun can be used during bad weather for inside target practice, or it will shoot the ball, it is stated, 300 feet in the air, making a loud report. The gun is referred to as being absolutely harmless, permitting any child

to use it with safety. It is stated that with a little practice the object can be hit every time. The point is made that the gun is a staple article, that it can be sold the year around and that it makes a good leader for the Fourth of July trade. Each gun is packed in a white cardboard box, including one ball and one box containing 50 giant caps. The ball and caps are made especially for the gun.

### The Eclipse Rubbing Stone.

The Pike Mfg. Company, Pike Station, N. H., have recently put on the market the new brand of rubbing stone shown herewith. The manufacturers claim that the stone cuts fast, leaving a perfectly smooth surface,



*The Eclipse Rubbing Stone.*

and that it will neither scratch or clog. It is specially adapted for rubbing down rough stuff and all wood work, leaving, it is remarked, a plano finish. It is claimed to be a superior article for scouring and cleaning wainscoting and floors. The company will furnish a free sample to any dealer or manufacturer who desires to investigate its merits.

### Autolyte Automobile Lantern.

A. H. Funke, 325 Broadway, New York, is exhibiting at the Automobile Show in Madison Square Garden the Autolyte, as here shown, for use on automobiles. It is made of brass, after one of the popular French pattern automobile headlights, and is designed to burn acetylene gas, generated in the usual way from calcium carbide, but it has the additional advantage of a spring candle



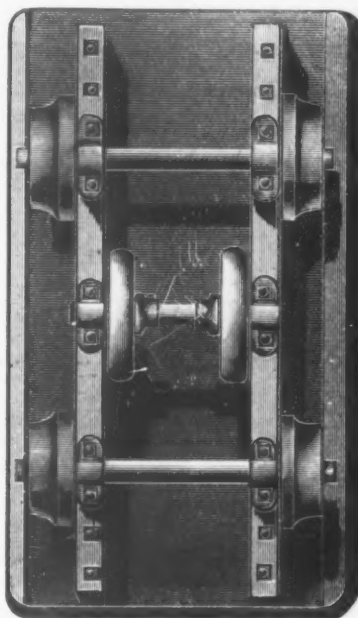
*Autolyte Lantern for Automobiles.*

attachment, which in an emergency will accommodate a tallow candle in place of the acetylene burner. It is made in two sizes. When used for a signal only in the city the gas burner can be unscrewed and the candle attachment put in, the operation requiring but a minute's time, and just as quickly the acetylene burner can be replaced. The candle or acetylene tip, when not in

use, is held securely by spring clamps under the hood and out of sight.

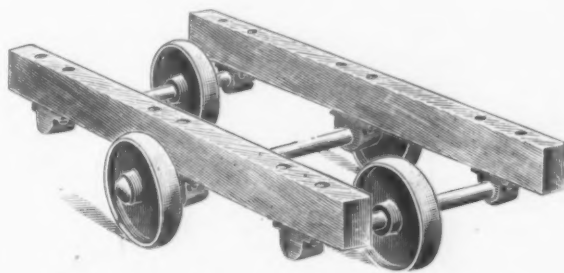
### Combination and Other Trucks.

H. C. Slingsby, 253 Broadway, New York, whose specialties in store, factory and other hand trucks fill a catalogue of 474 pages, offers the combination truck for rails and floors, a bottom view of which is shown in Fig. 1. It has six wheels, four of which have two treads, one for rails and one for floors, so that when the truck is on the rails the two center wheels are out



*Fig. 1.—Combination Truck with Treads for Rails and Floors.*

of action; when it is on the floor it balances on the center wheels, runs both ways and spins like a top, if necessary. The two center wheels ordinarily drop  $\frac{3}{4}$  inch below the wheels with two treads, although they can be placed as much as 2 inches below, if so ordered. The truck here illustrated will carry 1 to 3 tons in five sizes. It will not take crossings, except where turn tables are used, on account of the drop of the two center wheels. He also makes a heavy weight platform truck with six fixed wheels all on one level in a total of ten sizes, capable of carrying  $\frac{1}{2}$  ton to 5 tons. Fig. 2 illustrates his patented truck beams, with sliding wheels on forward and rear axles, so that the truck will swing



*Fig. 2.—Truck Beams with Two Sliding Wheels.*

in its own length. These are designed for any who wish to avail themselves of this style of running gear but want their own peculiar upper construction for a multiplicity of purposes. This style is made in seven sizes with a capacity for carrying 700 to 1700 pounds. Among the other odd forms of trucks, in addition to many of more common character, are bale trucks in several styles, bottle washing machine and tank trucks, bankers' oak bullion trucks, carcass, draining, fellmongers, lineoleum and warp beam trucks, together with dinner trucks or wagons in various styles and sizes. Some of the latter run on solid wheels and others on rubber tired cycle wheels, carrying from one to four trays for transferring prepared food from kitchen to dining room in fine establishments.



### The Handy Bench Cabinet.

The accompanying cuts show a bench cabinet offered by Chandler & Barber, 122-126 Summer street, Boston, Mass. The cabinet is designed for use by those without

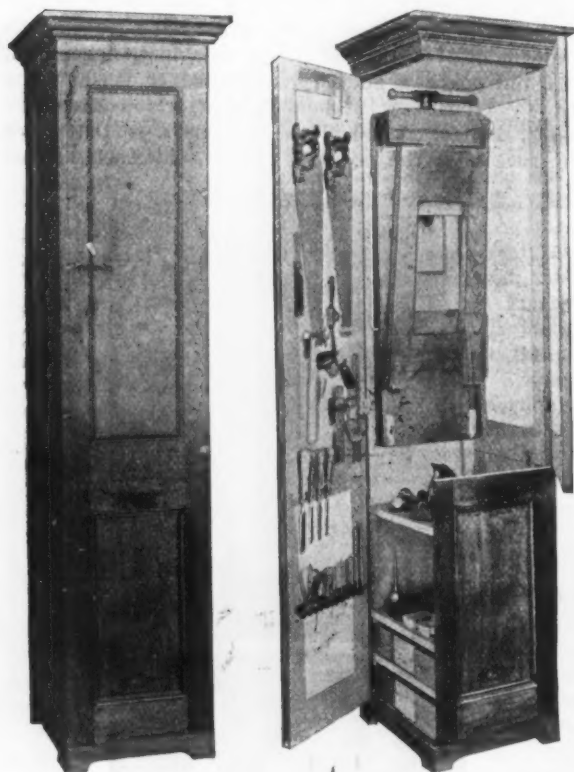


Fig. 1.—The Handy Bench Cabinet.

Fig. 2.—Cabinet Partially Open.

a convenient place for an ordinary work bench. When the cabinet is closed, as in Fig. 1, it has the appearance of a finely finished wardrobe, in size 17 inches square,

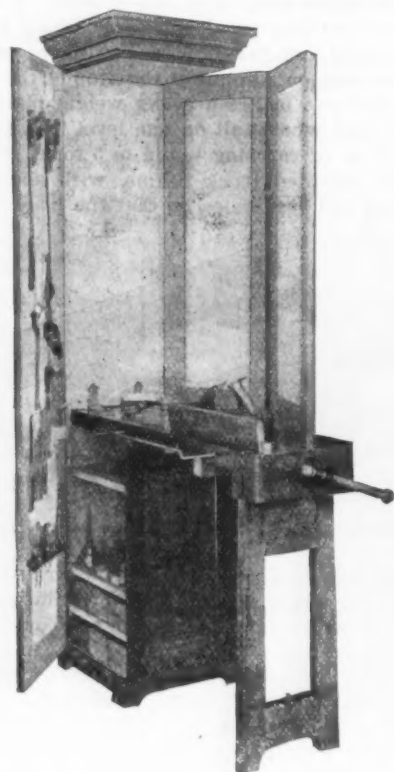


Fig. 3.—Cabinet with Bench Down.

standing about 6½ feet high. When the door in front, which extends about two-thirds of the height, is opened, as in Fig. 2, it brings to view such tools as are most frequent-

ly called for. When the door to the left, which extends the entire length, is opened, as in Fig. 2, it shows a larger assortment of tools with shelves for planes, screws, nails, &c. All the doors may be swung back, and the bench let down, as in Fig. 3. The bench, which is made of hard wood, is 3 feet long, and has a strong parallel jawed vise. It is provided with a bench stop and has a series of holes for similar stops running the entire length. This enables work to be held securely at both ends. There is a sliding guide on each side of the bench which supports work when necessary. The whole arrangement is referred to as entirely practical, being strong, and standing or fastened against the wall is perfectly rigid. The cabinets are sold with or without tools, the latter being of first quality and carefully selected.

### The Waterloo Hot Air Side Wall Register.

In Fig. 1 of the accompanying cuts is shown a hot air side wall register as it appears on the wall of a room, while in Fig. 2 it is illustrated open, in working order.

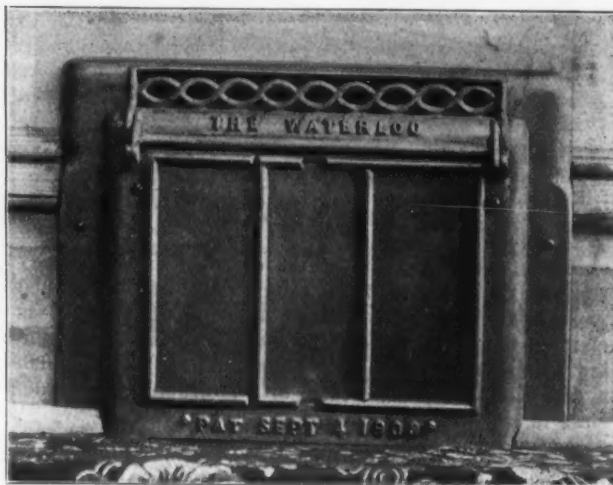


Fig. 1.—The Waterloo Hot Air Side Wall Register.

The register is referred to as having a tendency to throw the heat out into the room, rather than in the direction of the ceiling, as in the case of a floor register. The register is provided with a water pan, the hot air passing around the pan, causing the moisture to circulate through the room, according to the amount of water in the pan. It is explained that the hot water reservoir

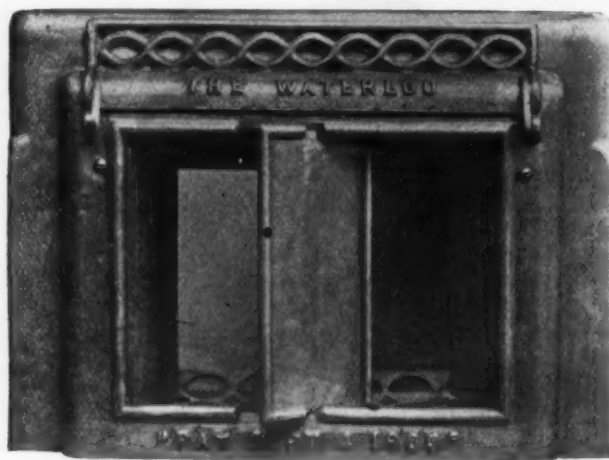


Fig. 2.—Register Open.

not only furnishes moist heat, but an abundance of hot water for toilet purposes in sleeping rooms. The registers are made in four sizes, for 6, 8, 10 and 12 inch furnace pipe. The registers are offered by the Waterloo Register Company, Waterloo, Iowa.

# Current Hardware Prices.

REVISED JANUARY 20, 1903.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33 1/2 @ 33 1/2 & 10% signifies that the

price of the goods in question ranges from 33 1/2 per cent. discount to 33 1/2 and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued April, 1902, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters' Blind—

Domestic, per doz. \$3.00.....33 1/2  
North's.....25 1/2  
Zimmerman's—See Fasteners, Blind.

## Window Stop—

Ives' Patent.....25 1/2  
Bull's Perfection.....25 1/2

## Ammunition—See Caps, Cartridges, Shells, &c.

## Anvils—American—

Arman Hammer, Wrought.....25 1/2  
Buel Patent Trenton.....25 1/2  
Eagle Anvils.....25 1/2  
Hay-Budden, Wrought.....25 1/2  
Horsehoe brand, Wrought.....25 1/2

## Imported—

Peter Wright & Sons.....25 1/2

## Anvil, Vise and Drill—

Millers Falls Co., \$15.00.....50 1/2

## Apple Parers—See Parers, Apple, &c.

## Aprons, Blacksmiths'—

Hull Bros. Co.:  
Lots of 1 doz.....25  
Smaller Lots.....25 1/2  
Lots of 3 doz.....30 1/2

## Augers and Bits—

Com. Double Spur.....70 1/2 @ 75 1/2

Boring Machine Augers.....70 1/2 @ 75 1/2

Car Bits, 12-in. twist.....60 1/2 @ 65 1/2

Jennings' Pattern.....60 1/2 @ 65 1/2

Auger Bits.....60 1/2 @ 65 1/2

Ford's Auger and Car Bits.....40 1/2

Forster Pat. Auger Bits.....35 1/2

C. E. Jennings & Co.:  
No. 10 ext. lip, R. Jennings' list 25 1/2 @ 10 1/2

No. 30, R. Jennings' list, 40 1/2 @ 7 1/2 @ 10 1/2

Russell Jennings.....25 1/2 @ 10 1/2

L'Honnemieu Car Bits.....15 1/2 @ 10 1/2

Mayhew's Countersink Bits.....40 1/2

Millers' Falls.....50 1/2 @ 10 1/2

Pugh's Black.....25 1/2

Pugh's countersink Bits.....25 1/2

Snell's Auger Bits.....60 1/2

Snell's Best Hangers' Bits.....50 1/2 @ 10 1/2

Snell's Car Bits, 12-in. twist.....60 1/2

Wright's Jennings Bits (R. Jennings' list).....50 1/2

## Bit Stock Drills—

Standard list.....65 1/2 @ 70 1/2

## Expansive Bits—

Clark's small, \$18; large, \$20.....50 1/2 @ 10 1/2

Lavigne's Clark's Pattern, No. 1, per doz. \$20.....50 1/2 @ 10 1/2

C. E. Jennings & Co., Steer's Pat. 25 1/2 @ 10 1/2

Swan's.....60 1/2

## Gimlet Bits—

Common Double Cut, gro. \$2.50 @ 2.00

German Pattern.....gro. \$4.00 @ 4.25

## Hollow Augers—

Bonney Pattern, per doz. \$11.00 @ 11.50

Amer.....35 1/2 @ 10 1/2

New Patent.....35 1/2 @ 10 1/2

Universal.....25 1/2

Wood's Universal.....25 1/2

## Ship Augers and Bits—

Ford's.....40 1/2

Scell's.....40 1/2

C. E. Jennings & Co.:  
L'Honnemieu's.....15 1/2 @ 10 1/2

Watrous'.....35 1/2 @ 10 1/2

## Awl Hafts, See Hafts, Awl.

## Awls—

Brad Awls:  
Handled.....gro. \$2.75 @ 3.00

Unhandl'd, Shouldered, gro. \$3 @ 3.00

Unhandl'd, Patent.....gro. 60 1/2 @ 70 1/2

Peg Awls:  
Unhandl'd, Patent.....gro. 31 1/2 @ 35 1/2

Unhandl'd, Shouldered, gro. 55 1/2 @ 70 1/2

Scratch Awls:  
Handled, Common, gro. \$3.50 @ 4.00

Handled, Socket.....gro. \$11.50 @ 12.00

Hurwood.....40 1/2

## Awl and Tool Sets—See Sets, Awl and Tool.

## Axes—

First Quality, factory brands.....\$6.00

First Quality, jobbers' brands.....35 1/2

Second Quality.....\$5.00 @ 5.25

## Axe Grease—See Grease, Axe.

## Axles—

Concord, Loose Collar.....4 1/2 @ 5 1/2

Concord, Solid Collar.....3 1/2 @ 4 1/2

No. 1 Common.....3 1/2 @ 4 1/2

No. 1 1/2 Com. New Style.....3 1/2 @ 4 1/2

No. 2 Solid Collar.....4 1/2 @ 5 1/2

Nos. 11 to 14.....65 1/2 @ 70 1/2

Nos. 15 to 18.....75 1/2 @ 80 1/2

Nos. 19 to 22.....75 1/2 @ 80 1/2

## Boxes, Axle—

Common and Concord, not turned.....lb. 1/4 @ 1/2

Common and Concord, turned.....lb. 1/4 @ 1/2

Half Patent.....lb. 1/4 @ 1/2

Chattillon's.....lb. 3 @ 3 1/2

## Balances—Sash—

Caldwell new list.....50 1/2

Poillon's.....60 1/2

## Spring—

Spring Balances.....50 1/2 @ 60 1/2

Chattillon's:  
Light Spg. Balances.....40 1/2 @ 10 1/2

Straight Balances.....40 1/2

Circular Balances.....50 1/2

Large Dial.....80 1/2

Perouse.....50 1/2

## Barb Wire—See Wire, Barb.

## Bars—Crow—

Steel Crowbars, 10 to 10 lb., per lb.....2 1/2 @ 3 1/2

## Towel—

No. 10 Ideal, Nickel Plate.....per gro. \$8.50

No. 20 Ideal, Brass Finish.....per gro. \$8.50

## Baskets—

Holland's Brick Baskets.....each \$3.25

## Beams, Scale—

Scale Beams, List Jan. 12, '92, 40 1/2 @ 10 1/2

Chattillon's No. 1.....30 1/2

Chattillon's No. 2.....40 1/2

## Beaters—Egg—

National Mfg. Co.:  
No. 1 Dover, Family size.....per gro. \$7.00

No. 2 Dover, Hotel size.....11.00

Taplin Mfg. Co.:  
No. 60 Improved Dover.....\$6.50

No. 75 Improved Dover.....\$7.50

No. 75-2 Imp'd Dover, Fin'd.....\$8.00

No. 100 Improved Dover.....\$9.00

No. 102 Improved Dover, Fin'd.....\$9.50

No. 150 Improved Dover, Hotel, T'd.....\$17.00

No. 200 Imp'd Dover Tumbler.....\$9.00

No. 202 Imp'd Dover Tumbler Fin'd.....\$10.00

No. 300, Imp'd Dover Mammoth.....\$7.00

Wonder (S. S. & Co.).....per gro. \$6.00

## Bellows—

Blacksmith, Standard List, 70 @ 70 1/2

## Blacksmiths'—

Inch.....3 1/2 3 3/4 3 1/2 3 3/4 3 1/2 3 1/2

Each.....\$3.50 3.75 4.25 4.50 5.00 5.50 6.15

Extra Length:  
Each.....\$4.00 4.55 5.10 5.60 6.40 7.50

## Molders—

Inch.....9 10 11 12 14 16

Doz.....\$6.75 7.25 8.50 9.50 12.00 14.50

## Hand—

Inch.....7 8 9 10 12

Doz.....\$4.75 5.25 5.75 6.25 7.00 8.00

## Bells—Cow—

Ordinary goods.....75 1/2 @ 75 1/2 @ 10 1/2

High grade.....70 1/2 @ 70 1/2 @ 10 1/2

Jersey.....75 1/2 @ 10 1/2

Texas Star.....50 1/2

## Door—

Abbe's Gong.....45 1/2

Barton Gong.....55 1/2

Home, R. & E. Mfg. Co.'s.....55 1/2 @ 10 1/2

Lever and Pull, Sargent's.....60 1/2 @ 10 1/2

Yankee Gong.....50 1/2

## Hand—

Hand Bells, Polished.....60 1/2 @ 60 1/2 @ 1 1/2

White Metal.....65 1/2 @ 55 1/2 @ 1 1/2

Nickel Plated.....50 1/2 @ 5 1/2 @ 1 1/2

Swiss.....60 1/2 @ 60 1/2 @ 1 1/2

Cone's Globe Hand Bells.....3 1/2 @ 3 1/2 @ 1 1/2

Silver Chime.....35 1/2 @ 35 1/2 @ 1 1/2

## Miscellaneous—

Farm Bells.....lb. 2 @ 2 1/2

Steel Alloy Church and School.....75 1/2 @ 7 1/2 @ 10 1/2

National Bell Foundry Co.:  
Superior Cast Steel Church and School.....50 1/2 @ 10 1/2 @ 60 1/2

American Tube & Stamp'g Co. Gongs.....70 1/2

Trip Gong Bells.....55 1/2 @ 10 1/2 @ 90 1/2

## Belt—Rubber—

Agricultural (Low Grade).....75 1/2 @ 10 1/2 @ 80 1/2

Common Standard.....75 1/2 @ 7 1/2 @ 10 1/2

Standard.....70 1/2 @ 70 1/2 @ 1 1/2

Extra.....60 1/2 @ 60 1/2 @ 1 1/2

High Grade.....50 1/2 @ 50 1/2 @ 10 1/2

Boston Belting Co.:  
Seamless Stitched Imperial.....45 1/2

Boston.....50 1/2

Niagara.....60 1/2

Leather—  
Extra Heavy, Short Lap.....60 1/2 @ 60 1/2 @ 1 1/2

## Regular Short Lap 60 1/2 @ 60 1/2 @ 10 1/2

Standard.....70 1/2 @ 70 1/2 @ 5 1/2

Light Standard.....70 1/2 @ 10 1/2

Cut Leather Lacing.....60 1/2 @ 10 1/2

Leather Lacing Sides, per sq. ft. 1.50

## Cotton—

Rosendale-Reddaway B. & H. Co.:  
Sphinx Brand.....60 1/2 @ 10 1/2

Durable Brand.....70 1/2

## Bench Stops—See Stops, Bench.

## Benders and Upsetters, Tire—

Detroit: Perfection Tire Bender.....40 1/2

Green River Tire Benders and Upsetters.....20 1/2

Detroit Stoddard's Lightning Tire Upsetters, No. 1, \$3.75; No. 2, \$6.50; No. 3, \$9.50; No. 4, \$14.75; No. 5, \$18.75.

## Bicycle Goods—

John S. Leng's Son's 1902 list:  
Chain.....50 1/2

Parts.....50 1/2

Spokes.....50 1/2

Hub.....60 1/2

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—  
See Augers and Bits.

## Blocks—Tackle—

Common Wooden.....70 1/2 @ 10 1/2 @ 75 1/2

Cleveland Steel.....60 1/2 @ 60 1/2 @ 10 1/2

No. 10 Steel Blocks, with Ford's Patent Slaves.....50 1/2 @ 10 1/2

Lane's Patent Automatic Lock and Junior.....30 1/2

Stowell's Novelty, Gal. Iron.....50 1/2 @ 10 1/2

See also Machines, Hoisting.

## Boards Stove—

Zinc, Crystal, &c.....40 1/2 @ 10 1/2 @ 50 1/2

## Bolts—

Carriage, Machine &c.—  
Common, list Feb. 1, '02.....60 1/2 @ 5 1/2 @ 10 1/2

Norway Iron, \$3.00, list Jan. 1, '95.....80 1/2 @ 50 1/2 @ 55 1/2

Phila. Eagle, \$3.00 list May 21, '99.....80 1/2 @ 50 1/2 @ 55 1/2

Bolt Ends, list Feb. 14, '95, 65 1/2 @ 2 1/2 @ 10 1/2

Machine, list Oct. 1, '99.....65 1/2 @ 10 1/2

Machine with C & T Nuts.....60 1/2 @ 2 1/2 @ 10 1/2

NOTE.—Jobbers are in many cases underselling the manufacturers.

## Door and Shutter—

Cast Iron Barrel, Round Brass Knob:  
Inch.....3 4 5 6 8

Per doz.....\$0.25 .30 .39 .51 .65

Cast Iron Spring Foot:  
Inch.....6 8 10

Per doz.....1.00 1.25 1.75

Cast Iron Chain, Flat, Japanned:  
Inch.....6 8 10

Per doz.....\$0.75 1.05 1.30



**Cartridges—**

Blank Cartridges:	
38 C. F., \$5.50	10¢55
38 C. F., \$7.00	10¢55
22 cal. Rim., \$1.50	10¢55
22 cal. Rim., \$2.75	10¢55
B. B. Caps, Con., Ball Suppl.	\$1.90
B. B. Caps, Round Ball	\$1.40
Central Fire	35¢
Target and Sporting Rifle	15¢55
Printed Shells and Bullets	15¢10¢
Rim Fire Sporting	50¢
Rim Fire Military	15¢55

**Castors—**

Bed	70¢70¢10¢
Plate	60¢60¢55¢
Philadelphia	75¢75¢10¢
Boss	70¢10¢
Boss Anti-Friction	70¢10¢
Martin's Patent (Phoenix)	45¢
Payson's Anti-Friction	70¢10¢10¢
Standard Ball Bearing	45¢
Tucker's Patent low list	30¢

**Cattle Leaders—**

See Leaders, Cattle.

**Chain, Coil—**

American Coil, Jobbers' Shipments:	
3-16 14 5-16 94 7-16 14 9-16	
8-70 6-55 5-10 4-20 4-01 3-50 3-55	
3-4 3-4 3-4 1 to 1 1/4 inch.	
3.81 3.75 3.70 3.60 per 100 lb.	
German Coil	60¢10¢10¢

**Halters and Ties—**

Halter Chains	60¢10¢10¢10¢10¢
German Halter Chain, list July 24, '97	60¢10¢60¢10¢10¢55¢
Cow Ties	70¢10¢10¢60¢

**Trace, Wagon, &c.—**

Traces, Western Standard: 100 pair	
6-16 6-16, Straight, with ring	\$30.00
6-16 6-16, Straight, with ring	\$31.00
6-16 6-16, Straight, with ring	\$34.00
6-16 6-16, Straight, with ring	\$39.00
add 2¢ per pair for Hooks	
Traces 2¢ per pair higher than	
Straight Link	
Trace, Wagon and Fancy Chains	50¢10¢50¢10¢10¢

**Miscellaneous—**

Jack Chain, list July 10, '93	
Iron	60¢10¢60¢10¢10¢
Brass	60¢10¢60¢10¢10¢
Safety Chain	70¢10¢75¢55¢
Gal. Pump Chain	1b. 4-6 1/4 4-6 1/4
Covert Mfg. Co.	
Breast	35¢25¢
Halter	35¢25¢
Rein	35¢25¢
Stallion	35¢25¢

**Covert Sads, Works—**

Breast	70¢
Halter	70¢
Hold Back	70¢
Rein	70¢
Oneida Community:	
Am. Coll. and Halters	40¢45¢55¢
Am. Cow Ties	45¢50¢55¢
Eureka Coll. and Halters	45¢50¢55¢
Niagara Coll. and Halters	45¢50¢55¢
Niagara Cow Ties	45¢50¢55¢
Wire Dog Chains	45¢50¢55¢

**Wire Goods Co.—**

Dog Chain	70¢10¢
Universal Dbl-Jointed Chain	50¢

**Chaik—(From Jobbers.)**

Carpenters' Blue	gro. 40¢45¢
Carpenters' Red	gro. 35¢40¢
Carpenters' White	gro. 30¢35¢

**See also Crayons.****Checks, Door—**

Bardley's	40¢10¢
Columbia	50¢10¢
Eclipse	60¢

**Chests, Tool—**

American Tool Chest Co.	
Boys' Chests, with Tools	35¢
Youths' Chests, with Tools	40¢
Gentlemen's Chests, with Tools	30¢
Farmers', Carpenters', etc., Chests	30¢
with Tools	30¢
Machinists' and Fly Filters' Chests	30¢
Empty	30¢
C. E. Jennings & Co.'s Machinists' Tool	30¢
Chests	30¢

**Chisels—**

Socket Framing and Firmer	
Standard List	70¢70¢10¢
Buck Bros	30¢
Charles Buck	30¢
C. E. Jennings & Co. Socket Firmer	30¢
No. 10	10¢
C. E. Jennings & Co. Socket Framing	30¢
No. 15	10¢
Swan's	70¢
L. & J. White	90¢90¢55¢

**Tanged—**

Tanged Firmers	60¢55¢60¢10¢
Buck Bros	30¢
Charles Buck	30¢
C. E. Jennings & Co. Nos. 10, 15, 18	16¢10¢
L. & J. White, Tanged	25¢35¢

**Cold—**

Cold Chisels, good quality, lb. 13¢15¢	
Cold Chisels, fair quality, lb. 11¢13¢	
Cold Chisels, ordinary, lb. 8¢9¢	

**Chucks—**

Beach Pat., each \$8.00	35¢35¢
Masey's Planer and Milling	15¢20¢
Pratt's Positive Drive	25¢
Empire	25¢
Blacksmiths	25¢
Skinner Patent Chucks:	
Combination Lathe Chucks	40¢
Drill Chucks, Patent and Standard	30¢
Drill Chucks, New Model	25¢
Independent Lathe Chucks	40¢
Improved Planer Chucks	25¢
Universal Lathe Chucks	40¢
Face Plate Jaws	40¢
Standard Tool Co.	
Improved Drill Chuck	45¢

**Union Mfg. Co.—**

Combination	40¢
Cut Drill	30¢
Geared Scroll	30¢
Independent	40¢
Union Drill	30¢
Universal	40¢
Face Plate Jaws	40¢

**Crackers, Nut—**

Little Giant	gr. \$24.00
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**Cradles—**

Grain	50¢
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**Cravens—**

White Round Crayons, gross, 54¢60¢	
Cases, 100 gro., \$4.50, at factory.	

**Wesott Patent Chucks—**

Lathe Chucks	50¢
Little Giant Auxiliary Drill	40¢
Little Giant Double Grip Drill	40¢
Little Giant Drill, Improved	40¢
Oneida Drill	40¢
Scroll Combination Lathe	40¢

**Clamps—**

Adjustable, Hammers	20¢20¢55¢
Cabinet Sargent's	50¢10¢
Carriage Makers', P. S. & W. Co.	50¢
Carriage Makers' Sargent's	50¢
Besly, Parallel	35¢40¢
Linemans, Ulica Drop Forge & Tool Co	40¢
Saw Clamps, see Vices, Saw Meters	

**Cleaners Sidewalk—**

Star Socket, All Steel	gr. \$4.05 net
Star Shank, All Steel	gr. \$3.24 net
W. & C. Shank, All steel, 7 1/2 in.	gr. \$3.05; 8 in., \$3.10; 8 1/2 in., \$3.25.

**Cleavers, Butchers—**

Foster Bros.	30¢
New Haven Edge Tool Co's.	45¢
Fayette R. Plumb	35¢40¢35¢10¢
P. S. & W.	50¢50¢55¢
L. & J. White	35¢

**Clippers—**

Chicago Flexible Shaft Company	
'98 Chicago horse	\$8.75
1902 Chicago Horse	\$10.75
Lightning Belt	\$15.00
Chicago Belt	\$20.00
Stewart's Patent Sheep	\$18.50

**Clips, Axle—**

Eagle and Superior 1/4 and 5-16	
inch	70¢10¢
Norway, 1/4 and 5-16 inch	70¢70¢10¢

**Cloth and Netting, Wire**

—See Wire, &amp;c.

**Cocks, Brass—**

Hardware list:	
Compression and Plain Bibbs	
65¢55¢65¢10¢	
Globe, Kerosene, Racking, &c.	
Cocks	65¢10¢70¢

**Coffee Mills—See Mills, Coffee.****Collars Dog—**

Brass, Walter B. Stevens & Son's list	40¢
Embossed, Gilt, Walter B. Stevens	\$15.00
Son's list	30¢10¢
Leather, Walter B. Stevens & Son's list	40¢

**Combs, Mane and Tail—**

Covert's Saddlery Works	60¢10¢
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**Compasses Dividers, &c.**

Ordinary Goods	75¢75¢55¢
Bemis & Call Hdw. & Tool Co.	
Dividers	65¢
Callipers, Call's Patent Inside	65¢
Callipers, Double	45¢
Callipers, Inside or Outside	45¢
Callipers, Wing	60¢
Compasses	50¢
J. Stevens A. & T. Co	25¢10¢

**Compressors Corn Shock—**

J. B. Hughes' per doz.	\$2.50
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**Conductor Pipe, Galva.—**

L. C. L. to Dealers.

Territory	Noted.
Eastern	75¢75¢
Central	75¢75¢
Southern	70¢70¢
S. Western	65¢10¢10¢
Terms, 25 for cash. With delivery on	
fruit crates.	

**Coolers, Water—**

Gal. each	1 2 3 4 5 6 8
Laborator \$1.20 \$1.50 \$1.80 \$2.10 2.70	
Gal.	1 2 3 4 5 6 8
Ice land, ea. \$1.80 \$2.10 \$2.40 \$3.00	
Gal.	1 2 3 4 5 6 8
Galv. Lined Ea. \$1.85 \$2.00 \$2.25 \$2.50	
Galv. Lined ea. handles	
Gal. 2 3 4 5 6 8	
Each. \$1.95 \$2.15 \$2.40 \$3.30 \$4.15, 25¢	

**Coopers' Tools—**

See Tools, Coopers'.	
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**Cord—**

Braided, Drab	lb. 25¢
Braided, White, Com.	lb. 17¢
Cable Laid Italian, lb. A, 15c; B, 16c	
Common India	lb. 9¢
Cotton Sash Cord, Twisted	12¢10¢
Patent Russia	lb. 12¢
Cable Laid Russia	lb. 12¢
India Hemp, Braided	lb. 12¢
India Hemp, Twisted	lb. 12¢
Patent India, Twisted	lb. 10¢
Pearl Braided, cotton	lb. 17¢
Massachusetts, White	lb. 25¢
Massachusetts, Drab	lb. 25¢
Eddystone Braided Cotton	lb. 19¢
Harmony Cable Laid Italian	lb. 18¢
Osawatomie Mills:	
Crown Solid Braided White	lb. 22¢
Braided, Giant, White	lb. 20¢

**Coopers' Tools—**

See Tools, Coopers'.	
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**Doors Screen—**

Porter's Plain, No. 6	per doz. \$8.50
Porter's Ornamental, No. 70	per doz. \$10.00

**Drawers, Money—**

Tucker's Pat. Alarm Till No. 1	per doz. \$18.00; No. 2, \$18.40; No. 3, \$18.40; No. 4, \$18.40.
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**Drills and Drill Stocks—**

Common Blacksmiths' Drill, each	\$1.50 to \$1.75
Blacksmiths' Self-feeding	\$3.75 to \$4.00
Breast, Millers Falls	15¢10¢
Breast, P. S. & W.	40¢55¢
Goodell Automatic Drills	40¢55¢40¢10¢
Jenns' Automatic Drills Nos. 2 and 3	10¢10¢
Johnson's Drill Points	10¢10¢
Millers Falls Automatic Drills	35¢40¢
Ratchet, Curtis & Curtis	25¢
Ratchet, Parker's	40¢
Ratchet, Weston's	35¢
Ratchet, Whitney's, P. S. & W.	50¢
Whitney's Hand Drill, No. 1	\$10.00
Adjustable, No. 10, \$12.00	33¢

**Twist Drills—**

Standard List	60¢10¢60¢10¢10¢
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**Drill Bits or Bit Stock**

Drills—See Augers and Bits.	
Scraper Driver Bits, per doz.	15¢75¢
Balsey's Screw Holder and Driver	per doz. \$1.40
1/4-inch, \$8; 3/4-inch, \$7.30 6-in., \$9.40	
Buck Bros	30¢
Buck Bros' Screw Driver Bits	30¢
Champion	50¢
Edson	50¢
Fray's Hand Hole Sds, No. 3	\$19.00
Gay's Double Action Ratchet	35¢
Goodell's Auto Sds 10¢10¢50¢10¢10¢55¢	
Hurwood	40¢
Mayhew's Black Handle	50¢
Mayhew's Monarch	40¢10¢
Millers Falls, No. 20 and 21	15¢10¢
Millers Falls, No. 11, 12, 41, 42	15¢10¢
Never Turn	60¢
New England Specialty Co.	50¢
Sargent & Co's:	
No. 1, 50, 55 and 60	60¢
Nos. 20 and 40	70¢

**Wire, Picture—**

List Oct. '00, \$5.50 to \$10.00 to \$5.50 to \$10.00 to \$10.00	
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**Crackers, Nut—**

Little Giant	gr. \$24.00
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**Cradles—**

Grain	50¢
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**Cravens—**

White Round Crayons, gross, 54¢60¢	
Cases, 100 gro., \$4.50, at factory.	

**D. M. Steward Mfg. Co.**

Metal Workers' Crayons, gr.	\$2.50
Soapstone Pencils, round, flat	
or square	gr. \$1.50
Rolling Mill Crayons	gr. \$2.50
Railroad Crayons (compo-	
sition) gr.	\$3.00

**See also Chalk.****Crooks, Shepherds'—**

Port Madison, Heavy	per doz. \$7.00
Port Madison, Light	per doz. \$6.50

**Crow Bars—See Bars, Crow.****Cultivators—**

Victor Garden	50¢
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**Cutlery Table—**

International Silver Company:	
No. 12 Medium Knives, 1817	per doz. \$3.50
Star, Eagle, Rogers & Hamilton and	
Anchor	per doz. \$3.00
Wm. Rogers & Son	per doz. \$2.50
Simcox L. & Co. H. Rogers Company	per doz. \$3.00
12 doz. Medium Knives	per doz. \$3.00
No. 77 Medium Knives	per doz. \$2.50

**Cutters—Glass—**

H. H. Mayhew Co.	40¢
Red Devil	50¢
Smith & Hemenway Co.	50¢
Woodward	40¢

**Meat and Food—**

<b>Meat and Food—</b>				
<i>Hale's., Nos. 11 &amp; 111 12 &amp; 112 13 &amp; 11</i>				
<i>Per doz ..</i>	<i>\$8.00</i>	<i>10.75</i>	<i>14.50</i>	
<b>American .....</b>				<b>30</b>
<i>Nos.</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>

**Gates, Molasses and Oil-**

Stebbles'.....80¢@85¢

**Gauges-**

Marking, Mortise, &amp;c.....55¢@10¢

Chapin-Stephens Co., Gauges.....55¢@10¢

Fulton's Bytt Gauge.....30¢@10¢

Stanley R. &amp; L. Co.'s Butt &amp; Rabbit Gauge.....90¢@20¢

Wire, Brown &amp; Sharpe's.....25¢

Wire, Morse's.....25¢

Wire P. S. &amp; W. Co.....30¢@10¢

**Gimlets- Single Cut-**

Nail, Metal, Assorted, gro. \$1.50 @ 1.60

Spike, Metal, Assorted, gro. \$2.80 @ 3.25

Nail, Wood Handled, Assorted, gro. \$1.75 @ 2.00

Spike, Wood Handled, Assorted, gro. \$3.25 @ 3.50

**Glass, American Window**

Jobbers' List, Dec. 16, 1902.

From store, Single and Double 90¢@10¢

F. O. B. factory, carload lots:

Single and Double.....90¢@25¢

2000 box lots.....90¢@25¢

**Glasses Level-**

Chapin-Stephens Co.....60¢@10¢

**Glue-Liquid, Fish-**

List A, Bottles or Cans, with Brush.....37½¢@50¢

List B, Cans (½ pts., pts., qts) 33½¢@48¢

List C, Cans (½ gal., gal.).....25¢@45¢

International Glue Co. (Martin's).....40¢@55¢

**Grease, Axle-**

Common Grade.....gro. \$5.00 @ 6.00

Dixon's Everlasting.....10-b pails, ea. \$5¢

Dixon's Everlasting, in bxs. 1 doz. 1 m.....\$1.20; 2 b \$2.00

**Snow Flake-**

1 qt. cans, per doz. \$2.00; 2 qt., \$3.20; 3 gal. cans, per doz. \$6.00; 3 gal. \$16.00; 5 gal. \$24.00

**Griddles, Soapstone-**

Pike Mfg. Co.....33½¢@33½¢

**Grindstones-**

Bicycle Emery Grinder.....\$0.50

Bicycle Grindstones, each.....\$2.50 @ 3.00

Pike Mfg. Co:

Improved Family Grindstones, per inch, per doz.....\$2.00 @ 38½¢

Pike Mower Knife and Tool Grinder, each.....\$1.00

Velox Ball Bearing, mounted, Angle Iron Frames.....each, \$3.25

**Guards Snow-**

Cleveland Wire Spring Co.: Galv. Steel 1000.....\$9.00

Copper 1000.....\$18.00

**Halters and Ties-**

Cover Mfg. Co.: Web.....45¢@25¢

Jute Rope.....45¢@25¢

Sisal Rope.....30¢@25¢

Cover's Saddlery Works:

Web and Leather Halters.....70¢

Jute and Manila Rope Halters.....70¢

Sisal Rope Halters.....60¢@20¢

Jute, Manila and Cotton Rope.....70¢

Sisal Rope Ties.....60¢@10¢

**Handled Hammers-**

Heller's Machinists', 40¢@10¢

Heller's Farriers', 40¢@10¢

Magnetic Tack, Nos. 1, 2, 3, \$1.25, \$1.50, \$1.75.....40¢@10¢

Peck, Stow &amp; Wilcox.....50¢

Fayette R. Plumb:

Plumb, A. E. Nail, 35¢@7¢@38½¢@1¢@7¢@5¢

Engineers' and B. S. Hand.....50¢

Machinists' Hammers 50¢@50¢@10¢@5¢

Riveting and Tinner's.....40¢@25¢@40¢@10¢@25¢

Sargent's C. S. New List.....40¢

**Heavy Hammers and Sledges-**

5 lb. and under.....lb. 45¢ 75¢@5¢@75¢

3 to 5 lb.....lb. 36¢ 40¢@10¢

Over 5 lb.....lb. 30¢

Wilkinson's Smith's.....94¢@10¢ lb.

**Handles-**

Agricultural Tool Handles-

Aze, Pick, &amp;c.....60¢@50¢@10¢@5¢

Hoe, Rake, &amp;c.....60¢@50¢@5¢

Fork, Shovel, Spade, &amp;c.....60¢

Long Handles.....60¢

D Handles.....50¢

**Cross-Cut Saw Handles-**

Akins.....40¢@5¢

Champion.....40¢@5¢

Diston's.....50¢

Mechanics' Tool Handles-

Auger, assorted.....gro. \$2.30 @ \$2.50

Brad Axl.....gro. \$1.25 @ \$1.50

Chisel Handles:

Apple Tanged Firmer, gro. ass'd, \$2.25 @ \$2.35; large, \$2.50 @ \$2.60

Hickory Tanged Firmer, gro. ass'd, \$1.75 @ \$2.20; large, \$2.50 @ \$3.70

Apple Socket Firmer, gro. ass'd, \$1.70 @ \$1.85; large, \$2.00 @ \$2.25

Hickory Socket Firmer, gro. ass'd, \$1.60 @ \$1.75; large, \$1.75 @ \$2.00

Hickory Socket Framing, gro. ass'd, \$2.50 @ \$2.75; large, \$2.65 @ \$2.85

File, assorted.....gro. \$1.00 @ \$1.15

Hammer, Hatchet, Aze, &amp;c.....50¢

Hand Saw, Varished, doz. 70¢@75¢

Not Varished.....55¢@90¢

Plane Handles:

Jack doz. 25¢; Jack Bolted.....55¢@90¢

Fore, doz. 35¢@38¢; Fore, Bolted.....70¢@75¢

Chapin-Stephens Co.:

Carving Tool.....60¢@40¢@10¢

Chisel.....65¢@50¢@10¢

File and Axl.....65¢@50¢@10¢

Saw Driver.....60¢@40¢@10¢

Millers Falls Adj. and Hatchet Auger Handles.....15¢@10¢

Nicholson Simplicity File Handle, gro.....\$0.35 @ \$1.50

**Hangers-**

Barn Door, New Pattern, Round Groove, Regular:

Inch.....3 4 5 6 8

Single Doz. \$0.85 1.20 1.50 1.90 2.30

Barn Door, New English Pattern, Check Back, Regular:

Inch.....3 4 5 6

Single Doz. \$1.10 1.60 2.15 2.70

Allith Mfg. Co. Reliable.....per doz. \$15.00

Chicago Spring Butt Co.: Friction.....25¢

Oscillation.....25¢

Big Twin.....25¢

Chisholm &amp; Moore Mfg. Co.: Baggage Car Door.....50¢

Elevator.....40¢

Railroad.....55¢

Cronk &amp; Carrier Mfg. Co.: Loose Axle.....60¢

Roller Bearing.....60¢@10¢

Lane Bros. Co.: Parlor Ball Bearing.....\$4.15

Parlor Standard.....\$3.35

Parlor, New Model.....\$3.85

Parlor New Champion.....\$2.25

Barn Door, Standard 50¢@10¢@5¢

Covered.....50¢@10¢@5¢

Special.....50¢@10¢@5¢

Lawrence Bros.: Advance.....60¢

Cleveland.....60¢@10¢

Crown.....60¢

Giant.....50¢@10¢

New York.....60¢

Peerless.....60¢@10¢

Sterling.....60¢

Swing, No. 65.....50¢@10¢

Union, No. 44 \$5.00; No. 45 \$7.00; No. 46 \$8.00

McKinney Mfg. Co.: No. 1, Special \$15.....60¢@10¢

No. 2, Standard \$15.....60¢@10¢

Hinged Hangers, \$15.....50¢

Meyers Stayon Hangers 30¢@10¢ (net)

C. S. Smith Mfg. Co.: Lundy Parlor Door.....50¢

Monarch Barn Door.....60¢

Never Jump Hinge.....50¢

Peerless.....60¢

Perfection.....60¢@10¢

Phoenix.....60¢@10¢

Wagner's Adjustable.....60¢@10¢

Warehouse Anti-Friction.....60¢

Stowell Mfg. and Foundry Co.: Acme Parlor Ball Bearing.....40¢

Atlas.....40¢

Badger Barn Door.....50¢

Baggage Car Door.....50¢

Climax Anti-Friction.....50¢

Elevator.....40¢

Express.....50¢

Interstate.....40¢

Lundy Parlor Door.....50¢

Magic.....50¢

Matchless.....60¢

Nansen.....60¢@10¢

Railroad.....50¢

Street Car Door.....50¢

Steel, Nos. 300, 404, 500.....40¢@15¢

Stowell Parlor Door.....50¢

Wild West, Nos. 300, 404, 500.....50¢

Zenith for Wood Track.....50¢

A. L. Sweet Iron Works:

Eagle.....60¢@10¢

Hyle.....50¢@5¢

Pilot.....50¢

Taylor &amp; Boggs Fy Cos. 50¢@15¢@10¢

Wilcox Mfg. Co.: Bike Roller Bearing.....60¢@10¢

C. J. Roller Bearing.....50¢

Cyclo Ball Bearing.....50¢

Dwarf Ball Bearing.....40¢

Ives, Wood Track.....60¢@10¢

L. T. Roller Bearing.....60¢@10¢

New Era Roller Bearing.....50¢@10¢

O. K. Roller Bearing.....60¢@10¢

Prindle, Wood Track.....60¢

Richards' Wood Track.....60¢

Richards' Steel Track.....50¢@10¢

Spencer Roller Bearing.....60¢@10¢

Tandem Nos. 1 and 2.....60¢

Underwriters' Roller Bearing.....40¢

Velvet.....30¢

Wilcox Auditorium Roller Bearing.....30¢

Wilcox Barn Trolley No. 123.....40¢

Wilcox Elevator Door Hangers, Nos. 112 and 122.....50¢

Wilcox Elevator Door Hangers, No. 132.....40¢

Wilcox Fire Trolley, Roller Bearing.....30¢

Wilcox Le Roy Noiseless Ball Bearing.....40¢

Wilcox New Century.....50¢@10¢@10¢

Wilcox O. K. Steel Track.....50¢

Wilcox O. K. Trolley.....50¢

Wilcox Trolley Ball Bearing.....40¢

Wilcox Wideman Narrow Gauge Ball Bearing.....40¢

For Track, see Rail.

**Hasps-**

McKinney's Perfect Hasp 1 doz. 50¢

Wrought Hasps, Staples, &amp;c.-See Wrought Goods.

**Hatchets-**

Best Brands.....50¢@50¢@10¢

Cheaper Brands.....50¢@50¢@10¢

Note.-Net prices often made.

**Hinges-**

Blind and Shutter Hinges-

Surface Gravity Locking Blind: (Victor; National; 1888 O. P. Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.....1 3 5

Doz. pair.....\$0.35 1.75 3.50

Mortise Shutter: (L. &amp; P. O. S. Dixie, &amp;c.)

No.....1 1½ 3 3½

Doz. pair.....\$0.70 3.50 6.50

Mortise Reversible Shutter, (Buffalo, &amp;c.)

No.....1 1½ 2

Doz. pair.....\$0.75 7.00 6.50

North's Automatic Blind Fixtures, No. 2 for Wood, \$9.00; No. 3, for Brick, \$11.50.....70¢@75¢

Parker.....70¢@75¢

Reading's Gravity.....75¢@10¢

Sargent's, Nos. 1, 3, 5, 11 &amp; 13.....70¢@10¢@20¢

Stanley's Steel Gravity Blind Hinges, 1 doz. sets, without screws, \$0.30, with screws, \$1.15.

Wrightsville Hardware Co.: O. S. Lull &amp; Porter.....7 &amp; 5¢

Acme, Lull &amp; Porter.....75¢

Queen City Reversible.....75¢

Senger's Positive Locking, Nos. 1 &amp; 3.....70¢@10¢

Shepard's Noiseless, Nos. 60, 65, 55.....70¢@10¢

Niagara, Gravity Locking, Nos. 1, 3 &amp; 5.....75¢

1888 Pat'n, Nos. 1, 1 &amp; 5.....75¢

Tip Pat'n, Nos. 1, 3 &amp; 5.....75¢

Buffalo Gravity Locking, Nos. 1, 3 &amp; 5.....75¢

Shepard's Double Locking, Nos. 30 &amp; 25.....70¢

Champion Gravity Locking, No. 75.....75¢

Steamboat Gravity Locking, No. 10.....75¢

Pioneer, Nos. 100, 45 &amp; 55.....75¢

Empire, Nos. 101 &amp; 103.....70¢

W. H. Co.'s Mortise Gravity Locking, No. 2.....60¢

**Gate Hinges-**

Clark's or Shepard's - Doz. sets:

No.....1 2 3

Hinges with Latches.....\$2.00 2.75 5.00

Hinges only.....\$1.10 2.05 3.50

Latches only.....70 70 35

New England:

With Latch.....doz.....\$2.50

Without Latch.....doz.....\$1.50

Reversible Self-Closing:

With Latch.....doz.....\$1.50

Without Latch.....doz.....\$1.45

Western:

With Latch.....doz.....\$1.50

Without Latch.....doz.....\$1.20

Wrightsville Hardware Co.: Shepard's or Clark's, doz. sets, No. 1 2 3

Hinges with Latches.....\$2.00 2.75 5.00

Hinges only.....1.40 2.05 3.50

Latches only.....70 70 135

**Spring Hinges-**

Holdback, Cast Iron, gro. \$9.50 @ 10.00

Non-Holdback, Cast Iron gro \$7 @ 7.50

J. Bardwy:

Bardwy's Patent Checking.....15¢

Bommer Bros.: Bommer Ball Ring Floor Hinges 40¢

Bommer Spring Hinges.....40¢

Chicago Spring Butt Co.: Chicago Spring Hinges.....27¢

Triple End Spring Hinges.....50¢

Chicago (Ball Bearing) Floor Hinge.....15¢

Garden City Engine House.....35¢

Keene's Saloon Door.....35¢

Columbian Brass Co.: Acme, Brass.....30¢

American.....30¢

Columbia, No. 14.....gr. \$0.00

Columbia, No. 18.....gr. \$25.00

Columbia, Adjustable, No. 7, gr. \$12.00

Gem, new list.....30¢

Clover Leaf.....gr. \$12.50

Oxford, new list.....30¢

Hoffman Hinge &amp; Foundry Co.: No. 7









<b>Sliding Shutter—</b>	
Reading list.....	70&10@75%
H. & E. 1st.....	34&35
Sargent's list.....	50&10%
<b>Shells— Shells, Empty—</b>	
Bras Shells, Empty:	
First quality, all gauges.....	60&5%
Climax, Club, Rival, 10 and 12 gauge.....	65&5%
<b>Paper Shell, Empty:</b>	
Ame, Ideal, Leader, New Rapid, Magic, 10, 12, 16 and 20 gauge.....	25&5%
Blue Rival, New Climax, Challenge, Monarch, Defender, New Victor, 10, 12, 16 and 20 gauge.....	20%
Climax Union, League, New Rival 10 and 12 gauge.....	25%
Cl max Union, League, New Rival 14, 16 and 20 gauge (7.50 list).....	20%
Expert, Metal Lined and Pigeon, 10, 12, 16 and 20 gauge.....	33&5%
<b>Shells, Loaded—</b>	
Loaded with Black Powder.....	40%
Loaded with Smokeless Powder, medium grade.....	4&5%
Loaded with Smokeless Powder, high grade.....	40&10%
<b>Shoes Horse, Mule, &amp;c.—</b>	
F. o. b., Pittsburg:	
Iron.....	per keg \$3.85
Steel.....	per keg \$3.60
Barden's, all sizes, per keg.....	\$3.90
<b>Shot—</b>	
Drop, up to B, 25-lb. bag.....	\$1.35
Drop, B and larger, per 25-lb. bag.....	\$1.60
Buck, 25-lb. bag.....	\$1.00
Chilled, 25 lb. bag.....	\$1.00
Dust Shot, 25-lb. bag.....	\$1.10
Marble's Chilled.....	\$1.90
Raymond Chilled.....	\$1.30
Sparks Chilled.....	\$1.60
Tatum's Chilled.....	\$1.60
<b>Shovels and Spades—</b>	
Association List, N. v. 15, 1902.....	40%
<b>Sieves and Sifters—</b>	
Hunter's Imitation, gro. \$11.00 to \$11.50	
Buffalo Metallic Blue, S. & Co., per gr.: 14&16 16&18 18&20	
\$12.90 \$13.80 \$15.00	
<b>National Mfg. Co.:</b>	
Victor.....	per gro. \$12.00
Surprise.....	per gro. \$11.00
No Name.....	per gro. \$11.00
Shaker (Harley's Pat.) Flour Sifters.....	\$9.00
per doz., \$3.00.....	90%
<b>Sieves, Tin Rim—</b>	
Per dozen:	
Mesh.....	1 16 18 20
Black full size.....	\$1.20 1.25 1.30 1.35
Plated, full size.....	\$1.30 1.35 1.40 1.45
Black, scant.....	\$0.55 1.00 1.05
<b>Sieves, Wooden Rim—</b>	
Nested, 10, 11 and 12 Inch.....	
Mesh 18, Nested, doz.....	\$0.65 @ 75
Mesh 21, Nested, doz.....	75 @ 85
Mesh 24, Nested, doz.....	90 @ 1.00
<b>Sinks— Cast Iron—</b>	
Standard list.....	61 @ 90&10%
<b>NOTE—</b> There is not entire uniformity lists used by jobbers.	
<b>Skelins Wagon—</b>	
Cast Iron.....	70 @ 70&10%
Malleable iron.....	40 @ 10&50%
Steel.....	40 @ 10&10%
<b>Slates, School—</b>	
Factory Shipments.	
"D" Slates.....	45%
Noiseless Slates.....	60&4 tens & 5%
Wire Bound.....	40%
<b>Slaw Cutters—See Cutters.</b>	
<b>Slicers, Vegetable—</b>	
Sterling No. 10, \$2.00.....	39 1/2
<b>Snaps, Harness—</b>	
German.....	40 @ 40&10%
Covert Mfg. Co.:	
Deroy.....	3&2%
High Grade.....	45&2%
Jockey.....	40&2%
Trojan.....	45&2%
Yankee.....	35&2%
Yankee, Roller.....	30&2%
<b>Covert's Saddlery Works:</b>	
Crown.....	60%
German.....	60%
Model.....	60%
Triumph.....	60%
<b>W. &amp; E. T. Fitch Co.:</b>	
Bristol.....	40&10%
Empire.....	50&5%
German.....	40%
National.....	50&5%
Perfect.....	45%
Clipper.....	50&5%
Champion.....	40%
Security.....	40%
Victor.....	60&5%
Oneida Community.....	60&5%
Solid Steel.....	60&5%
Solid Swive.....	60%
Sargent's Patent Guarded.....	60&5%
<b>Snaths—</b>	
Scythe.....	50 @ 50&1%
<b>Snips, Tinnners'—See Shears.</b>	
<b>Spoons and Forks—</b>	
<b>Silver Plated—</b>	
Good Quality.....	50&10 @ 60&10&5%
Cheap.....	40 @ 50&10%
International Silver Co.	
1847 Rogers Bros. and Rogers & Hamiliton.....	40&10%
Rogers & Bro., William Rogers Eagle Brand.....	50&10%
Anchor, Rogers Brand.....	60%
Wm. Rogers & Son.....	60&10%
Simoon L. & Geo. H. Rogers Co.:	
Silver Plated Flat Ware.....	60%
No. 17 Silver Plated Ware.....	60&10%

<b>Miscellaneous—</b>	
German Silver.....	60 @ 60&10%
Cararraugus Cutlery Co.:	
Yukon Silver.....	50%
Simoon L. & Geo. H. Rogers Co.:	
German or Nickel Silver, Special list.....	1 & 10%
<b>Tinned Iron—</b>	
Teas.....	per gro. 45&5%
Tables.....	per gro. 90&10%
<b>Springs— Door—</b>	
Gem (Coil).....	20%
Star (Coil).....	30%
Torrey's Rod, 30 in.....	50 @ \$1.10
Victor (Coil).....	50&10&10%
<b>Carriage, Wagon, &amp;c.</b>	
2 1/2 in. and Wider:	
Black or 1/4 Bright, lb.....	54&c
Bright, lb.....	54&c
<b>Painted Seat Springs:</b>	
1 1/2 x 2 1/2 per pr.....	50 @ 55c
1 1/2 x 2 1/2 per pr.....	60 @ 65c
1 1/2 x 3 x 28 and narrower, per pr.....	80 @ 55c
<b>Cliff's Springs:</b>	
Booster.....	40%
Seat.....	per pair \$1.80
Pole, per pair, 1/4 in. \$1.10; 1/2 in. \$1.25	
<b>Sprinklers, Lawn—</b>	
Enterprise.....	35 @ 39%
Mackey.....	per doz. \$1.80
Philadelphia No. 1, per doz. \$1.2; No. 2, \$1.5; No. 3, \$2.4.....	30%
<b>Squares—</b>	
Nickel plated.....	List Jan. 5, 1900.
Steel and Iron.....	70&10%
Rosewood Hdl Try Square and T-Bevels.....	60&10&10&70%
Iron Hdl. Try Squares and T-Bevels.....	40&10&10&10&70%
Disston's Try Sq. and T-Bevels.....	70%
Winterbottom's Try and Miter.....	40&10&40&10&10%
<b>Squeezers— Lemon—</b>	
Wood, Common, gro. No. 0, \$5.25 @ \$5.60; No. 1, \$6.25 @ \$6.50.	
Wood, Porcelain Lined.....	
Cheap.....	doz. \$2.00 @ 2.75
Good Grade.....	doz. \$3.00 @ 3.50
Thinned Iron.....	doz. \$0.75 @ 1.25
Iron, Porcelain Lined doz.....	\$2.90 @ 3.25
<b>Staples—</b>	
Barbed Blind.....	lb. 60 @ 64c
Electricians', Association list.....	80&10&10&10%
<b>Fence Staples, See Trade Report.</b>	
Galvanized, 10c less than Barb Wire	
Polished, 20c less than Barb Wire.	
Poultry Netting, Staples.....	per lb. 34 @ 2 1/2c
<b>Grand Crossing Tack Co.'s list.....</b>	
80&10%	
<b>Steels, Butchers'—</b>	
Dick's.....	30%
Foster Bros'.....	30%
Hartzell Cutlery Co.....	40&5%
C. & A. Hoffmann's.....	40%
<b>Steelyards.....</b>	
25&10 @ 30&10%	
<b>Stocks and Dies—</b>	
Blacksmith's.....	40&10 @ 50%
Curtis Reversible Ratchet Die Stock.....	25%
Derby Screw Plates.....	25%
Gardner Die Stocks No. 1.....	50%
Gardner Die Stocks, larger sizes.....	40%
Green River.....	25%
Lightning Screw Plate.....	25%
Little Giant.....	25%
Reece's New Screw Plates.....	25&30%
<b>Stone—</b>	
<b>Scythe Stones—</b>	
Chicago Wheel & Mfg. Co.:	
Gem Corundum, 1/2 inch, \$3.00 per gro. 12 inch, \$10.00	
Pike Mfg. Co. 1901 list:	
Black Diamond S. S.....	per gro. \$12.00
Lamotte S. S.....	per gro. \$11.00
White Mountain S. S.....	per gro. \$9.00
Green Mountain S. S.....	per gro. \$8.00
Extra Indian Pond S. S.....	per gro. \$7.50
No. 1 Indian Pond S. S.....	per gro. \$7.00
No. 2 Indian Pond S. S.....	per gro. \$6.50
Leader and End S. S.....	per gro. \$4.50
Balance of 1901 list.....	\$8.50
<b>Oil Stones, &amp;c.</b>	
Chicago Wheel & Mfg. Co. 1901 list:	
Gem Corundum Oil, Double Grit.....	50%
Gem Corundum Oil, Single or Double Grit.....	35%
Gem Corundum Slips.....	50%
Gem Corundum Razor Hones.....	50%
Pike Mfg. Co. 1901 list:	
Arkansas Stone, No. 1, 3 to 5 1/2 in.....	\$2.80
Arkansas Stone, No. 1, 5 to 8 in.....	\$3.50
Arkansas Slips No. 1.....	\$4.00
Lilly White Washita 4 to 8 in.....	60c
Rosy Red Washita 4 to 8 in.....	60c
Washita Stone, Extra, 4 to 8 in.....	50c
Washita Stone, No. 1, 4 to 8 in.....	40c
Washita Stone, No. 2, 4 to 8 in.....	30c
Lilly White Slips.....	90c
Rosy Red Slips.....	80c
Washita Slips, No. 1.....	70c
India Oil Stones (entire list).....	25c
Hindustan No. 1, Regular.....	per doz. \$1.00
Hindustan No. 1, Small.....	per doz. \$1.00
Axe Stones (all kinds).....	33 1/2
Turkey Oil Stones, ex 3 to 5 in.....	per doz. \$1.00
Queer Creek Stones, 4 to 8 in.....	30c
Queer Creek Slips.....	90c
Sand Stone.....	40c
Belgian, German and Swaty Razor Hones.....	40%
Natural Grit Carving Knife Hones.....	per doz. \$3.00
Quick Edge Pocket Knife Hones.....	per doz. \$3.00
Mounted Kitchen Sand Stone.....	per doz. \$1.50
<b>Stoners— Cherry—</b>	
Enterprise.....	35 @ 30%
<b>Stops Bench—</b>	
Milner's.....	15&10%
Morrill's.....	per doz. No. 1, \$10.00
Morrill's, No. 2, \$12.50.....	50%
<b>Plane—</b>	
Chapin-Stephens Co.....	20%
<b>Straps— Box—</b>	
Cary's Universal, case lots.....	\$20&10%

<b>Home—</b>	
Covert's Saddlery Works.....	60&10%
<b>Stretchers, Carpet—</b>	
Cast Iron, Steel Points.....	doz. 55 @ 60c
Socket.....	doz. \$1.75
<b>Stuffers Sausage—</b>	
Enterprise Mfg. Co.....	25 @ 25&7 1/2%
National Specialty Mfg. Co. list Jan. 1, '07.....	30%
<b>Supports, Porch—</b>	
Hoffman's Porch Supports.....	per doz. 25c
<b>Sweepers, Carpet—</b>	
National Sweeper Co.:	
Marion, Roller Bearing, regular finishes, full Nickel.....	\$24.00
Marion Queen, Roller Bearing, Fancy Veneers, full Nickel.....	\$27.00
Monarch, Roller Bearing, Nickel.....	\$22.00
Monarch, Roller Bearing, Jap'ned.....	\$24.00
Marion Queen, Roller Bearing, Regular Finishes, full Nickel.....	\$24.00
Glass Top, Nickel.....	\$32.00
Monarch Extra, Roller Bearing, 17-inch case, Nickel.....	\$36.00
Monarch Extra, Roller Bearing (17-inch case), Japanned.....	\$32.00
Perpetual, Regular Bearings, Nkl.....	\$20.00
Perpetual, Regular Bearings, Jap.....	\$14.00
<b>NOTE—</b> Discount of 30c per dozen on three dozen lots. Discount of 1c per dozen on five dozen lots.	
<b>Tacks Brads, &amp;c.—</b>	
List Jan. 15, '03.	
Carpet Tacks, American.....	90&10&50&50%
American Cut Tacks.....	90&10&50&50%
Steedes Iron Tacks.....	90&10&50&50%
Steedes Upholsterers' Tacks.....	90&10&50&50%
Gimp Tacks.....	90&10&50&50%
Lace Tacks.....	90&10&50&50%
Trimmers' Tacks.....	90&10&50&50%
Looking Glass Tacks.....	70&10&50%
Bill Posters' and Railroad Tack.....	90&10&50&50%
Hungarian Nails.....	80&10&50&50%
Common and Patent Brads.....	80&10&50&50%
Trunk and Clout Nails.....	80&10&50&50%
<b>NOTE—</b> The above prices are for Straight Weights. An extra 5% is given Star Weights and an extra 10% on Standard Weights.	
<b>Miscellaneous—</b>	
Double Point Tacks.....	90 and 5 tens
Steel Wire Brads, R. & E. Mfg. Co.'s list.....	50&10&50%
See also Nails, Wire.	
<b>Tanks, Oil—</b>	
Each.....	
Emerald, S. S. & Co.....	30-gal \$3.40
Emerald, S. S. & Co.....	60-gal, \$4.25
Queen City S. S. & Co., 50-gal.....	\$3.65
Queen City S. S. & Co., 60-gal.....	\$4.50
<b>Tapes, Measuring—</b>	
American Asses' Skin.....	40&10 @ 70%
Patent Leather.....	25 @ 30&5%
Steel.....	40 @ 40&5%
Chesterman's.....	25 @ 25&5%
Eddy's Steel.....	40&10&5%
Eddy's Metallic.....	35 @ 35&5%
Keuffel & Esser Co., Steel and Metallic, Lower list, 1899.....	35%
Lufkin's Steel.....	33 @ 35%
Lufkin's Metallic.....	30 @ 30&5%
<b>Teeth, Harrow—</b>	
Steel Harrow Teeth, plain or headed, 1/2 inch and larger, per 100 lbs.....	\$2.55c
<b>Thermometers—</b>	
Tin Case.....	80&10 @ 80&10&5%
<b>Ties, Bale—Steel Wire.</b>	
Single Loop.....	80 @ 80&10%
Improved, Monitor, Cross Head, Etc.....	70%
<b>Ties, Wall—</b>	
Cleveland Wire Spring Co.:	
Galv. Steel 5-32 x 6 1/2 in. # 1000.....	\$10.00
Galv. Steel 5-32 x 8 1/2 in. # 1000.....	\$11.00
Galv. Steel 5-32 x 11 1/2 in. # 1000.....	\$12.00
Galv. Steel 5-32 x 15 1/2 in. # 1000.....	\$14.00
<b>Tinners' Shears, &amp;c.—</b>	
See Shears, Tinnners', &c.	
<b>Tinware—</b>	
Stamped, Japanned and Pieced, sold very generally at net prices.	
<b>Tips, Safety Pole—</b>	
Covert's Saddlery Works.....	60&10%
<b>Tire Benders, Upsetters, &amp;c.—See Benders and Upsetters. Tire.</b>	
<b>Tools— Coopers'—</b>	
L. & I. J. White.....	20 @ 20&5%
<b>Saw—</b>	
Atkins' Cross Cut Saw Tools.....	40%
Simonds' Improved.....	33 1/2
Simonds' Crescent.....	25%
<b>Ship—</b>	
L. & I. J. White.....	25%
<b>Transom Lifters—</b>	
See Lifters, Transom.	
<b>Traps— Fly—</b>	
Balloon, Globe or Acme.....	
doz. \$1.15 to 1.25; gro. \$11.50 to 12.00	
Harper, Champion or Paragon.....	doz. \$1.25 to 1.50; gro. \$13.00 to 13.50
<b>Game—</b>	
Oneida Pattern.....	80 @ 30&5%
Newhouse.....	45 @ 45&5%
Hawley & Norton.....	65 @ 65&5%
Victor (Oneida Pattern).....	75 @ 75&5%
Star (Blake Pattern).....	65 @ 65&10%
<b>Mouse and Rat—</b>	
Mouse, Wood, Choker, doz. holes.....	8 1/2 @ 9c
<b>Mouse, Round or Square Wire—</b>	
doz. 85 @ 90c	
Mouse Traps.....	per doz. 40c
Elit Rat Traps.....	per doz. \$1.00
<b>Marty French Rat and Mouse Traps (Genuine):</b>	
No. 1, Rat, Each \$1.12 1/2; per doz. \$12.00	

No. 3, Rat, per doz. \$8.00; case of 50.....	\$5.25 doz
No. 3 1/2, Rat, per doz. \$4.75; case of 72.....	\$4.25 doz
No. 4, Mouse, per doz. \$3.50; case of 7.....	\$3.75 doz
No. 5, Mouse, per doz. \$2.75; case of 150.....	\$2.25 doz
Schuyler's Rat Killer, No. 1, per gr. \$30.00	
No. 2, per gr. \$30.00; Mouse, No. 3, \$18.00.....	per gro.
J. M. Mast Mfg. Co.:	
Blizzard.....	No. 12, \$3.00 No. 1, \$9.50
Old Nick.....	No. 30, 2.22 No. 2, 8.40
Joker.....	No. 5, 2.10 No. 3, 8.40
Imp'd Snap Shot, Mouse, per gro. 2.....	hole, \$2.40
Imp'd Snap Shot, Mouse, per gro. 4.....	hole, \$4.20
<b>Target—</b>	
Markle's, each.....	\$5.50
<b>Trimmers Spoke—</b>	
Bonney's Nos. 1 and 2.....	40%
Wood's E. I.....	50%
<b>Trowels—</b>	
Disston Brick and Pointing.....	30%
Disston Plastering.....	25&5%
Disston "Standard Brand" and Garden Trowels.....	35%
Never-Break Steel Garden Trowels.....	gro. \$6.00
Peace's Plastering.....	30%
Rose Brick and Plastering.....	25&5%
Woodrough & McParlin, Plastering.....	25&5%
<b>Trucks, Warehouse, &amp;c.—</b>	
B. & L. Block Co.:	
New York Pattern.....	50&10%
Western Pattern.....	60&10%
Handy Trucks.....	per doz. \$16.00
Grocery.....	per doz. \$15.00

**Ware Hollow—****Cast Iron, Hollow—**

Love Hollow Ware:	60%
Ground.....	60%
Unground.....	65%
White Enamelled Ware:	
Martin Kettles.....	70%
Coated Ware:	
Tinned and Turned.....	50%
Enamelled.....	50%
See also Pots Glue.	

**Enamelled—**

Agate Nickel Steel Ware, list Nov. 1.	50% 10%
Iron Clad Ware.....	70% 10%
Java, Enamelled.....	40% 10%
Never Break Enamelled.....	50%

**Tea Kettles—**

Galvanized Tea Kettles:	
Inch.....	6 7 8 9
Each.....	50c 55c 60c 65c

**Steel Hollow Ware.**

Avery Spiders & Griddles.....	65% 65% 55%
Avery Kettles.....	50% 50% 50%
Porcelain.....	50% 50% 50%
Never Break Spiders and Griddles.....	65% 55%

Never Break Kettles.....	60%
Solid Steel Spiders & Griddles.....	65% 55%
Solid Steel Kettles.....	60%

**Warmers, Foot—**

Pike Mfg. Co., Sonstone.....	30% 40% 10%
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**Washboards—**

Solid Zinc:	50%
Crescent, family size, bent frame.....	\$3.00
Red Star, family size, stationary protector.....	\$3.00
Double Zinc Surface:	
Saginaw Globe, family size, stationary protector.....	\$2.65
Cable Cross, family size, stationary protector.....	\$2.90

**Single Zinc Surface:**

Nalad, family size, open back perforated.....	\$2.40
Saginaw Globe, protector, family size, ventilated back.....	\$2.25
Bras, Surface:	
Brass King, Single Surface, open back.....	\$3.00
Nickel Plate Surface:	
No. 1001 Nickel Plate, Single Surface.....	\$3.00

**Washers—****Leather, Axle—**

Solid.....	85% 10% 85% 10% 10%
Patent.....	85% 10% 85% 20%
Coil:	3/8 1 1 1/4 1 1/2 Inch.
	3c 10c 11c 13c per 100

**Iron or Steel—**

Size bolt.....	5-16 3/4 1/2 9/8 3/4
Washers.....	\$5.00 5.70 4.50 4.20 4.00
In lots less than one keg add 1/2c per lb., 5-lb. boxes add 1/2c to list.	

**Cast Washers—**

Over 1/2 inch. barrel lots. per lb.....	1 1/2c 1 3/4c
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**Wedges—**

Oil Finish.....	lb. 2.90 3.10c
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**Weights—**

Covert's Saddlery Works.....	60% 10%
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**Hitching—**

Per ton, f.o.b. factory:	
Eastern District.....	\$25.00
Western, Central and Southern Districts.....	\$25.00

**Wheels, Well—**

3-in., \$1.00 @ 1.00; 10-in., \$2.00 @ 1.00;	
12-in., \$2.50 @ 2.50; 14-in., \$4.00 @ 1.25	

**Wire and Wire Goods—**

Bright and Annealed:	
6 to 9.....	72% 50% 72% 10%
10 to 18.....	72% 50% 72% 10%

**19 to 26.....**

75% 10% 75% 10% 75%	
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**Galvanized:**

6 to 18.....	70% 70% 5%
19 to 26.....	72% 50% 72% 10%
27 to 36.....	72% 50% 72% 10%

**Coppered:**

6 to 9.....	70% 70% 5%
10 to 18.....	70% 70% 5%
19 to 26.....	75% 10% 75% 10% 75%
27 to 36.....	75% 10% 75% 10% 75%

**Tinned:**

6 to 9.....	75% 75% 10%
15 to 18.....	72% 40% 7%
19 to 26.....	70% 50% 70% 5%
27 to 36.....	70% 70% 5%

**Annealed Wire on Spools.....****Brass and Copper Wire on Spools.....**

60% 60% 5%	
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**Brass, list Feb. 26, '96.....****Copper, list Feb. 26, '96.....****Cast Steel Wire.....****Stub's Steel Wire.....****Wire Clothes Line, see Lines.....****Wire Picture Cord, see Cord.....****Bright Wire Goods—****Wire Cloth and Netting—****Galvanized Wire Netting.....****Painted Screen Cloth per 100 ft.....****Light Hardware Grade:****2-S Mesh, Plain (Sc. list) sq. ft.....****2-S Mesh, Galv. (Sc. list) sq. ft.....****Wire, Barb—See Trade Report.....****Wrenches—****Agricultural.....****Baxter Pat'n S Wrenches.....****Drap Forged S.....****Acme.....****Alligator.....****Bull Dog.....****Bemis & Call's.....****Adjustable S Pipe.....****Brigg's Pattern.....****Combination Black.....****Combination Bright.....****Cylinder or Gas Pipe.....****Extra Heavy.....****Merrick's Pattern.....****No. 3 Pipe, Bright.....****Boarman's.....****Coe's Genuine.....****Coe's "Mechanics".....****Donohue's Engineer.....****Dudley Auto.....****Eagle.....****Elgin Wrenches.....****Elgin Monkey Wrench Pipe Jaws.....****Gem Pocket.....****Hercules.....****W. & B. Machinist:****Case lots.....****Less than case lots.....****Improved Pipe W & B.....****Solid Handles, P. S. & W.....****Stillson.....****Triumph.....****Vulcan Chain.....****Fruit Jar—****Perfection Fruit Jar Wrenches, P. gro., \$6****Triumph Fruit Jar Wrenches, P. gro., \$6.00; Can Wrenches, P. gro., \$4.00.****Triumph Fruit Jar Holders, P. doz., \$1.50; P. gro., \$15.00.****Wrought Goods—****Staples, Hooks, &c., list March 17****Yokes, Neck—****Covert Saddlery Works, Trimmels.....****Covert Saddlery Works, Neck Yoke Centers.....****Yokes, Ox, and Ox Bows—****Fort Madison's Farmers & Freighters.....****Zinc—****Sheet.....****PAINTS, OILS AND COLORS.—Wholesale Prices.****White Lead, Zinc, &c.****Lead, English white, in Oil.....****Lead, American white, in Oil:****Lots of 500 lb or over.....****Lots less than 500 lb.....****Lead, White, in Oil, 25 lb tin****paids, add to keg price.....****Lead, White, in Oil, 12 1/2 lb tin****paids, add to keg price.....****Lead, White, in Oil, 1 to 5 lb as****sorted tins, add to keg price.....****Lead, White, Dry in bbls.....****Lead, American, Terms: On lots of 500****lbs. and over, 60 days, or 25 for cash if****paid in 15 days from date of invoice.****Zinc, American, dry.....****Zinc, Paris, Red Seal, dry.....****Zinc, Paris, Green Seal, dry.....****Zinc, Antwerp, Red Seal, dry.....****Zinc, Antwerp, Green Seal, dry.....****Zinc, V. M. French, in Poppy Oil,****Green Seal:****Lots of 1 ton and over.....****Lots of less than 1 ton.....****Zinc, V. M. French, in Poppy Oil,****Red Seal:****Lots of 1 ton and over.....****Lots of less than 1 ton.....****Discounts—V. M. French Zinc.—Dis-****counts to buyers of 10 bbls. lots of one or****assorted grades, 1%; 25 bbls., 2%; 50****bbls., 4%.****Dry Colors.****Black, Carbon.....****Black, Drop, Amer.....****Black, Drop, Eng.....****Black, Ivory.....****Lamp, Cont.....****Blue, Celestial.....****Blue, Chinese.....****Blue, Prussian.....****Blue, Ultramarine.....****Brown, Spanish.....****Brown, Vandyke, Amer.....****Brown, Vandyke, Foreign.....****Carmine, No. 40.....****Green, Chrome, ordinary.....****Green, Chrome, pure.....****Lead, Red, bbls., 1/2 bbls. and kegs:****Lots 500 lb or over.....****Lots less than 500 lb.....****Litharge, bbls., 1/2 bbls. and kegs:****Lots 500 lb or over.....****Lots less than 500 lb.....****Ocher, French Washed.....****Ocher, Dutch Washed.....****Ocher, American.....****Orange Mineral, English.....****Orange Mineral, French.....****Orange Mineral, German.....****Orange Mineral, American.....****Red, Indian, English.....****Red, Indian, American.....****Red, Turkey, English.....****Red, Tuscan, English.....****Red, Venetian, Amer.....****Red, Venetian, English.....****Sienna, Italian, Burnt and****Powdered.....****Sienna, Italian, Raw.....****Sienna, American, Burnt and****Powdered.....****Talc, French.....****Talc, American.....****Terra Alba, French.....****Terra Alba, English.....****Terra Alba, American No. 1.....****Terra Alba, American No. 2.....****Umber, Turkey, Bnt. & Pow.....****Umber, Turkey, Raw & Powd.....****Umber, Bnt. Amer.....****Umber, Raw, Amer.....****Yellow, Chrome.....****Vermilion, American Lead.....****Vermilion, Quicksilver, bulk.....****Vermilion, Quicksilver, bags.....****Vermilion, English, Import.....****Vermilion Chinese.....****Colors in Oil.****Black, Lampblack.....****Blue, Chinese.....****Blue, Prussian.....****Blue, Ultramarine.....****Brown, Vandyke.....****Green, Chrome.....****Green, Paris.....****Sienna, Raw.....****Sienna, Burnt.....****Umber, Raw.....****Umber, Burnt.....****Miscellaneous.****Barytes, Foreign, P. ton.....****Barytes, Amer. float.....****Barytes, Crude, No. 1.....****Chalk, in bulk.....****China Clay, English.....****Cobalt, Oxide.....****Whiting, Common.....****Whiting, Gliders.....****Whiting, extra Gliders.....****Putty.****In bladders.....****In bulk.....****In cans 1 lb to 5 lb.....****In cans 12 lb to 25 lb.....****Spirits Turpentine.****In Southern bbls.....****In machine bbls.....****Glue.****Cabinet.....****Extra White.....****French.....****Irish.....****Low grade.....****Medium White.....****Animal, Fish and Vege-****table Oils.****Linseed, City, raw.....****Linseed, City, boiled.....****Linseed, State and West, raw.....****Linseed, raw Calcutta see.....****Lard, Prime.....****Lard, Extra No. 1.....****Lard, No. 2.....****Cotton-seed, Crude, L. & H. mill.....****Cotton-seed, Summer Yellow,****prime.....****Cotton-seed, Summer Yellow,****off grades.....**



JANUARY 21, 1903.

**IRON AND STEEL—**  
Bar Iron from Store—

Lake .....	1234c
Casting.....	121

To No. 20 inclusive.	.22	.23	.25	.27	.29	.31	.33	.36
Nos. 21, 22, 23 and 24	.22	.24	.26	.28	.30	.32	.34	.37

Wrought Scrap Iron.....	♣ gross ton	\$16.50 @ 16.75
Heavy Cast Scrap.....	♣ gross ton	\$15.50 @ 16.00
.....	♣ gross ton	\$11.00 @ 11.50

Stove Plate Scrap.....	7 gross ton	\$11.00 @ 11.5
Burnt Iron.....	7 gross ton	\$9.00 @ 9.5